

NEW BEDFORD

INSTITUTE OF TEXTILES
AND TECHNOLOGY

1955-1957



New Addition — Engineering and Science Building

New Bedford Institute *of* Textiles and Technology

A College of Textiles and Engineering

COEDUCATIONAL

BACHELOR OF SCIENCE

Textile Chemistry

Textile Design and Fashion

Textile Engineering

Mechanical Engineering

Electrical Engineering



CATALOGUE
1955 - 1957

FOREWORD

The purpose of this issue of the Catalogue is to provide information for prospective students, or anyone else who may be interested, regarding the history, traditions, objectives, resources, programs, equipment and staff of the Institute.

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ACADEMIC CALENDAR

1955-1956

1955

September 8, Thursday, 9:00 A.M.	Freshman Registration
September 9, Friday, 9:00 A.M.	Freshman Orientation
September 12, Monday, 8:30 A.M.	First semester begins
September 26-September 30 (Monday-Friday)	Class elections
October 12, Wednesday	Columbus Day—Holiday
November 11, Friday	Veterans Day—Holiday
November 23, Wednesday, 12 M.	Thanksgiving Recess Begins
November 28, Monday, 8:30 A.M.	Thanksgiving Recess Ends
December 16, Friday, 3:50 P.M.	Christmas Recess Begins

1956

January 3, Tuesday, 8:30 A.M.	Christmas Recess Ends
January 16, Monday	Mid-year Examinations Begin
January 27, Friday	Mid-year Examinations End
January 30, Monday, 8:30 A.M.	Second Semester Begins
February 22, Wednesday	Washington's Birthday—Holiday
March 23, Friday, 3:50 P.M.	Spring Recess Begins
April 2, Monday, 8:30 A.M.	Spring Recess Ends
April 19, Thursday	Patriots Day—Holiday
May 21—June 1	Final Examinations
May 30, Wednesday	Memorial Day—Holiday
June 3, Sunday	Commencement and President's Reception

1956-1957

1956

September 6, Thursday, 9:00 A.M.	Freshman Registration
September 7, Friday, 9:00 A.M.	Freshman Orientation
September 10, Monday, 8:30 A.M.	First Semester Begins
September 24-September 28 (Monday-Friday)	Class Elections
October 12, Friday	Columbus Day—Holiday
November 12, Monday	Veterans Day—Holiday
November 21, Wednesday, 12 M.	Thanksgiving Recess Begins
November 26, Monday, 8:30 A.M.	Thanksgiving Recess Ends
December 18, Tuesday, 3:50 P.M.	Christmas Recess Begins

1957

January 2, Wednesday, 8:30 A.M.	Christmas Recess Ends
January 14, Monday	Mid-year Examinations Begin
January 25, Friday	Mid-year Examinations End
January 28, Monday, 8:30 A.M.	Second Semester Begins
February 22, Friday	Washington's Birthday—Holiday
March 22, Friday, 3:50 P.M.	Spring Recess Begins
April 1, Monday, 8:30 P.M.	Spring Recess Ends
April 19, Friday	Patriots' Day—Holiday
May 20—May 31	Final Examinations
May 30, Thursday	Memorial Day—Holiday
June 2, Sunday	Commencement and President's Reception

BOARD OF TRUSTEES

JOHN J. DESMOND, JR., *Commissioner of Education, ex-officio.*

HON. ARTHUR N. HARRIMAN, *Mayor, Municipal Building, ex-officio.*

W. KENNETH BURKE, *Superintendent of Schools, 166 Williams St., ex-officio.*

Term Expires 1955

JOHN VERTENTE, JR., 67 Mechanics Lane, New Bedford, Mass. Secretary-Treasurer, Business Agent, United Textile Workers of America, A. F. of L.

ALBERT MEDEIROS, 69 Independent St., New Bedford, Mass. Machine Tool Industry.

LAURENT FAUTEUX, 241 State St., New Bedford, Mass. Owner, Cape Cod Bag Co., 1357 Rodney French Blvd., New Bedford, Mass.

EDMUND RIGBY, 11 Fort St., Fairhaven, Mass. Assistant Treasurer, Hathaway Manufacturing Company, New Bedford, Mass.

RAYMOND R. McEVOY, 156 Porter St., Stoughton, Mass. U. S. Civil Service Commission, Office of Director, Federal Bldg. Room 1050, Boston, Mass.

Term Expires 1956

MRS. IDA EPSTEIN, 8 Hawthorne Terrace, New Bedford, Mass. Housewife.

WILLIAM E. KING, 84 Court St., New Bedford, Mass. Asst. Supervisor, Dept. of Education, Rehabilitation Division, Division of University Extension, Duff Building, New Bedford, Mass.

WILLIAM B. FERGUSON, 62 Grant St., New Bedford, Mass. Owner, West End Gas and Electric Appliance Company.

CLARENCE G. BOWMAN, 310 Hemlock St., New Bedford, Mass. Owner, Bowman Trucking and Rigging, 308 Mill St., New Bedford, Mass.

JOSEPH DAWSON, JR., 15 Elm St., So. Dartmouth, Mass. Owner, Knowles Loom Reed Works, Inc., P. O. Box 589, New Bedford, Mass.

Term Expires 1957

NILS V. NELSON, 8 Temple Ave., Winthrop Mass. Office, N. V. Nelson Co., Cotton, 93 Federal St., Boston, Mass.

JOHN A. SHEA, 384 Washington St., Taunton, Mass. Representative for Neuss Hesslein & Co., New York.

PHILIP MANCHESTER, Westport Harbor, Mass. Superintendent, Berkshire Fine Spinning, Inc., King Phillip A. Division, 941 Grinnell St., Fall River, Mass.

HENRI HORN, 447 New Boston Rd., Fall River, Mass. Superintendent, Berkshire Fine Spinning, Inc., King Phillip B. Division, 941 Grinnell St., Fall River, Mass.

MISS E. FERRIS ALMADA, 6 Ocean St., New Bedford, Mass. Retired.

ADMINISTRATION

JOSEPH DAWSON, JR., *Chairman, Board of Trustees.*

JOHN VERTENTE, JR., *Vice-Chairman, Board of Trustees*

MRS. IDA EPSTEIN, *Secretary, Board of Trustees*

JOHN E. FOSTER, *President of the Institute*

FRANCIS TRIPP, *Dean of Faculty*

AUGUSTUS SILVA, *Dean of Students*

JAMES L. GIBLIN, *Director of Placement*

MARY F. MAKIN, *Treasurer*

Department of Textiles

JAMES L. GIBLIN, M.S.

Professor in Charge of Textile Engineering Department

FRED BEARDSWORTH

Associate Professor of Weaving

EDWARD H. CLOUTIER

Associate Professor of Knitting

FRANK HOLDEN

Associate Professor of Yarn Calculations

LOUIS PACHECO, JR., B.S. in Te., M.Ed.

Assistant Professor of Yarn Calculations

ANTONE RODIL

Assistant Professor of Weaving

NANCY A. MERRIAM, B.F.A.

Instructor in Textile Design

CLIFFORD N. BECK, B.S. in T. E.

Instructor in Microscopy and Testing

WILLIAM S. KIRK

Instructor in Yarn Preparation

EVELYN RAMALHETE

Instructor in Fashion Design

JOHN T. REGAN, A.B.

Instructor in Weaving

Department of Chemistry

FRANCIS TRIPP, B.S., M.S., Ch.E.

Professor in Charge of Chemistry Department

JOHN C. BROADMEADOW, B.S. in Ch.E., M.Ed.

Associate Professor of Organic Chemistry

EDMUND J. DUPRE, B.S. in T.C.

Associate Professor of Dyeing and Finishing

LOUIS E. F. FENAUX, B.S., M.S. in Ch.

Associate Professor of Analytical Chemistry

FERDINAND P. FIOCCHI, B.S.

Instructor in Inorganic Chemistry

Department of Engineering

HOWARD C. TINKHAM, B.S. in M.E.

Assistant Professor in Charge of Engineering Department

ADAM BAYREUTHER

Assistant Professor of Tool Manufacturing

JOHN R. BARYLSKI, B.S. in M.D.

Instructor in Mechanical Engineering

LENINE GONSALVES, B.S.

Instructor in Electrical Engineering

WARREN M. HOLT, B.S.

Instructor in Mathematics and Physics

ANTHONY J. JOHN, B.S.

Instructor in Mathematics and Physics

LAWRENCE M. SYLVIA, B.S., M.Ed.

Instructor in Mathematics and Physics

ALDEN W. COUNSEL, B.S. in M.E.

Instructor in Mechanical Engineering

Department of Humanities

AUGUSTUS SILVA, A.B., M.A.

Assistant Professor in Charge of English

CELESTINO D. MACEDO, A.B., M.A.

Instructor in Humanities and Social Sciences

LEO M. SULLIVAN, B.S., M.A.

Assistant Professor in Charge Humanities and Social Sciences

NEW BEDFORD INSTITUTE OF TEXTILES AND TECHNOLOGY 1898 - 1954

HISTORY

The Institute of Textiles and Technology, one of the most modern and best-equipped institutes of its kind in the world, was established and incorporated by the Board of Trustees on August 1, 1895, under Chapter 475 of the Acts of 1895 of the Commonwealth of Massachusetts.

The first meeting of the Board of Trustees was held on January 27, 1896 and committees were appointed to supervise activities with relation to building, finance, machinery, education and other necessary executive functions. During the year 1897 the city of New Bedford appropriated \$25,000 for the use of the school and the Commonwealth of Massachusetts appropriated an additional \$25,000 the following year. With these funds the first of the present five buildings was constructed.

The first building, consisting of three stories and a basement, comprised about 22,000 square feet of floor space. During the first 25 years of the school's existence, four buildings were added; three in the form of additions and one, the recitation building, a separate structure, was connected to the others by an overpass and tunnel.

Since its founding the Institute has attempted to organize and conduct programs in technology which will equip the student to cope successfully with problems relative to industrial development, manufacturing, and research. It has been its policy to provide consistently instruction in both the theory and practice in all phases of dyeing, manufacturing, and distribution of textiles.

In addition to its program in textile education, the Institute has over the years introduced programs in technology relative to industrial areas other than textile manufacturing. These include courses of instruction in textile chemistry, mechanical engineering, textile design and fashion, and industrial electronics and electricity.

The New Bedford Institute of Textiles and Technology is proud of its professional standing and of the recognition it receives throughout the world. This recognition is evidenced by the large number of foreign students who attend each year. The current enrollment consists of students from approximately fifteen states and twelve foreign countries. Among the latter are Mexico, Israel, Ecuador, Salvador, Korea and Pakistan. Others came from France, Chile, Bolivia, Canada, China, Haiti, Brazil and Greece.

THE NEW SCIENCE HALL

The new science hall, which will be completed in the fall of 1955, comprises the major portion of the Institute's expansion program for more adequate classroom and laboratory facilities. This new addition, involving an outlay of approximately one million dollars, will supplement the present facilities of the college with modern engineering,

science, and research laboratories. These will include mechanical engineering, electrical engineering, physics, physical chemistry, and microbiology laboratories. In addition, this new construction will house all administrative offices, additional classrooms, an amphitheatre, and a modern gymnasium. Plans are now being completed to add a new auditorium to the present expansion program.

COLLEGE FACILITIES

Library

The Institute's library contains approximately 6,000 volumes, all of which pertain for the most part, to textile manufacturing, chemistry, and general engineering. Present plans call for a library in the new addition to house a minimum of 15,000 volumes. The library currently subscribes to approximately one hundred journals and publications published periodically by professional societies and industrial organizations.

The students also have access to the New Bedford Public Library. This library contains a very comprehensive collection of about 250,000 volumes. All courses offered at the institute require the student to make full use of all these facilities.

Bookstore

The Institute maintains a bookstore on the second floor of the administration building. This store is operated on a non-profit basis. All supplies, books, etc., are sold at very little above cost—this difference covers the cost of maintaining the store.

The student will find all the supplies he needs in this bookstore. Although the student is not required to purchase these supplies, he is advised not to buy elsewhere until he is certain those things he will buy are approved by the person in charge of the course in which the equipment is to be used. All supplies in the bookstore are approved.

ENVIRONMENT

The Institute is situated in the city of New Bedford, Massachusetts. It is located along the main bus line; both the bus terminal and railroad station are within walking distance.

New Bedford, an industrial city, is an especially suitable location for a school of this type. For many years it has been recognized as the world's largest manufacturer of fine cotton yarns and fancy fabrics. In recent years the industry of this city has become more diversified. Many new industries have found New Bedford, with its skilled manpower, particularly suited to their type of work. These industries include the world's largest manufacturers of electronic equipment along with an important manufacturer of condensers. One of the world's most important manufacturers has long been established here and more recently a leading manufacturer of machine tools has migrated to this industrial city.

Textile, machine tool, and rubber manufacturing or processing do not constitute the whole of New Bedford's diversified industry. This historical city has long been recognized as a leading fishing port. Each year, mil-

lions of dollars worth of fish are brought into this port, either for direct shipment or for New Bedford's large fish processing houses.

These industries, both old and new, afford the Institute many opportunities for planned inspection trips. This, we feel, is an invaluable aid in acquainting the student with the practical phases of his academic work.

Students wishing to remain in New Bedford during the summer recess will find many opportunities to work during this period. Because of the nature of the city's industry, the student often finds work which is in his chosen field, thereby gaining practical experience as well as financial aid to meet the expenses incurred during the school year.

The civic center of New Bedford is a few minutes walk from the school grounds. Here the student will find the municipal building, the main library, veterans administration building and many other city and county buildings. Close to the civic center he will find the city's largest shopping and theatre district.

STUDENT EXPENSES

Tuition and General Fees

The tuition for all courses varies according to the residential status of the student. For residents of Massachusetts, the rate is one hundred dollars per year; for residents of other states, the fee is two hundred and fifty dollars. The rate for all foreign students is five hundred dollars.

All students pay a registration fee of \$2.50.

LABORATORY AND SPECIAL FEES (for one academic year)

Athletics	\$15.00
Student Activities	10.00
Chemistry Laboratory	
Chemistry majors	10.00
Non-chemistry majors	5.00
Machine Shop Laboratory	1.00
Chemicals (for non-residents of Massachusetts)	10.00
Books and Supplies (estimated)	75.00

REFUNDS

Any student withdrawing during the first six weeks of the semester is eligible to receive a refund according to the following schedule:

Request	Refund
Less than one week	100%
Less than two weeks	80%
Between two and six weeks	40%
After six weeks	0%

STUDENT ORGANIZATIONS

Student Council

This is a body consisting of elected representatives from each of the four classes, and one faculty representative. Its purpose is to study problems of the student body, class activities, and the various matters of

student organization. The council represents the student body in proposing changes or making recommendations to the college authorities.

Interfraternity Council

An organization consisting of members representing each of the men's and women's fraternities. One member is chosen from the faculty. This body determines the rushing season and the rules which control rushing. It has charge of enforcement of all institute rules regarding membership in fraternities.

Fraternities

There are three national, professional and social men's fraternities and one women's sorority.

These are: Phi Psi, Delta Kappa Phi, Sigma Phi Tau, Kappa Sigma Phi. These fraternities maintain chapter rooms and all play a major part in the social and athletic affairs of the Institute.

Athletic Association

This is a body consisting of representatives of the Board of Trustees and representatives of the faculty. The purpose of this group is to determine all athletic policies. The athletic council determines the budgets for each sport and all schedules must meet their approval.

College Glee Club

For all students interested in music, a Glee Club has been organized. The Glee Club is supported by the Student Council. The purpose of the Club is to furnish both a musical and social outlet to its members, who meet weekly with a capable director, preparing a repertoire of songs for different functions during the school year.

Engineering Club

This organization is available only to those students majoring in mechanical engineering.

Radio Club

This organization is composed of students from the electrical or mechanical engineering department who are interested in amateur activity—transmission, reception, and experimentation.

Student Chapter of the American Association of Textile Chemists and Colorists

This organization is open to students majoring in Textile Chemistry, Dyeing, and Finishing.

Camera Club

A club for all students interested in photography as a hobby. A complete dark-room is available to club members.

Circle K Club

This organization is sponsored by Kiwanis International.

Tech Talk

A student quarterly publication.

Fabricator

The student annual illustrated publication sponsored by the senior class.

ACADEMIC PROMOTION

In general, a student to be classified as a Sophomore must have obtained at least two-thirds of the semester hours prescribed in his Freshman program plus an equal number of quality points; as a Junior at least three-fourths of the prescribed semester hours for the previous two years plus an equal number of quality points; and as a Senior at least nine-tenths of the prescribed semester hours for his previous three years plus an equal number of quality points.

STUDENT CONDUCT

It is to be assumed that students matriculating in any one of the various programs offered by the Institute have attained sufficient maturity and developed those attributes conducive to an adequate preparation for professional careers. This means that the administration at the Institute expects that each student will have developed an ability to get along well with others and to maintain a personal high standard of honesty and moral conduct. The Institute has not established any rigid rules restricting the conduct of individuals or groups of students. However, it will be understood that a student may be dropped from the rolls or subjected to other disciplinary action, for conduct which is illegal, immoral, or not in keeping with the best interest of the Institute.

GUIDANCE AND COUNSELING

Because the Institute is a small college, a close personal relationship is maintained between the student body and the faculty. Through the Dean of Students and Faculty Advisors, assistance is given to students during the year in the scheduling of their classes and in solving problems which may arise during the year. Whenever it is deemed necessary, correspondence and interviews are entered into between the Dean of students and families of those students whose performance is not considered satisfactory.

The freshman year begins with a Freshman Orientation Period immediately preceding the fall term. Registration, general intelligence and aptitude tests are completed, orientation lectures on campus and professional life are given. Interpretive results of the intelligence and aptitude tests are available to the students, to the Dean of Students, and to the faculty advisors to aid in the making of decisions throughout the student's college career.

Laboratory and drawing courses are arranged so that the average student will not find it necessary to supplement the scheduled hours with outside preparation.

An average of one and one-half hours of preparation for each hour of lecture or recitation will be required of freshmen.

ADMISSIONS

The Institute will accept for admission to the freshman class graduates of recognized high schools having 15 high school credits.

Subjects required for entrance:

- | | |
|--|---|
| 1. Prescribed 7 units
English—3 units
Algebra—1 unit
Geometry—1 unit
U. S. History—1 unit
Lab. science—1 unit | 2. Optional units
Mathematics—unlimited
Science—unlimited
Social Studies—not more than three
Foreign Language—not more than three
Other high school credits—varied and subject to evaluation by the faculty committee on admissions. |
|--|---|

Students matriculating in the Textile Design and Fashion course are accepted for admission from a recognized high school and are not required to meet the entrance requirements specified for admission to the programs in engineering.

Diploma and Certificate Courses

The number of students admitted to these courses will be limited according to the number of degree students admitted.

Requirements for entrance:

All applicants must have a high school diploma or its equivalent.

Subjects required for entrance will be determined by the courses to be taken.

All applicants must present with their application a certified transcript of their secondary school record.

HOUSING FACILITIES

Dormitory facilities are not provided by the Institute. For non-residents, however, excellent accommodations with private families living within walking distance of the Institute are readily available. A list of approved rooms is maintained and arrangements may be made through the Institute to secure suitable living quarters.

ENDOWMENTS AND SCHOLARSHIPS

The New Bedford Institute of Textiles and Technology is wholly supported by the Commonwealth of Massachusetts and has no endowments.

The following scholarships are offered and are controlled by the school authorities. There are also available about ten other scholarships which are controlled elsewhere. Those which are controlled by the school authorities are as follows:

WILLIAM FIRTH SCHOLARSHIP FUND:

A 3,000 dollar fund deposited in the New Bedford Five Cents Savings Bank. Only the interest of this fund may be used for scholarships.

THE MANNING EMERY, JR., SCHOLARSHIP FUND:

A 3,000 dollar fund deposited in the New Bedford Institution for Savings Bank. Only the interest may be used for scholarships.

THE NEUSS, HESSLEIN & CO. SCHOLARSHIP FUND:

A 5,000 dollar fund set up by the Neuss, Hesslein and Co. of New York City.

AWARDS

THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS MEDAL:

The National Association of Cotton Manufactureres offers a medal, to be awarded each year to the student in the Textile Engineering graduating class who shows the greatest proficience in scholarship. This is determined by an examination of all students records and the medal is awarded to that student having the highest average according to the credit point system of determining averages.

The competition for this medal is also open to all evening students who have completed the full course of study required for a degree in Textile Engineering. The association offering the medal has made it a condition of the award that at least four members of the graduating class be eligible to the competition.

EVERETT H. HINCKLEY SCHOLARSHIP AWARD:

This is an annual award of 100 dollars made by the New York Chapter of the New Bedford Institute of Textiles & Technology Alumni Association. It is offered in memory of Everett H. Hinckley, former head of the Institute's Chemistry Department.

THE WILLIAM E. HATCH KEY:

This award is made to the member of the freshman class of Textile Engineering, who has the highest credit point average for the year. It is awarded by the Alumni Association of the Institute, to commemorate the day of William E. Katch's retirement from the presidency of the Institute.

THE MORRIS H. CROMPTON AWARD:

This key is awarded to the student of the graduating class of Machine Design, who has the highest four year average according to the credit point system of determining averages. It is awarded in honor of Morris H. Crompton, former head of the Department of Engineering.

THE FRED E. BUSBY AWARD:

This key is awarded by the Alumni Association to the student of the graduating class of chemistry, who has attained the highest four year average according to the credit point system. It is presented in Honor of Fred E. Busby, former head of the Department of Chemistry.

THE AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS AWARD:

This award is presented annually to the outstanding senior in the Textile Chemistry Course. The award is a book.

THE SAMUEL HOLT DESIGNING AWARD:

This award, a suitably engraved key, is sponsored by the Alumni Association. Presentation is made, annually, to a graduating student in recognition of excellence in Textile Designing. The award is made as an expression of appreciation and grateful acknowledgment on the part of the Alumni in Mr. Holt's honor. Mr. Samuel Holt, former head of the Designing Department retired from the faculty in 1938. He is respectfully remembered by all who studied under him for his kindness, patience, understanding and ever-willing desire to assist the individual student just a little bit more.

THE AMERICAN ASSOCIATION OF TEXTILE TECHNOLOGIST AWARD:

The basic objective of the American Association of Textile Technologists is to encourage in the broadest and most liberal manner the advancement of textile technology. The furtherance of this objective is certain progress by the Association's encouragement in the field of textile education.

In order to fulfill this objective, the American Association of Textile Technologists is presenting the plaque to an outstanding student, who has been selected by the faculty of the New Bedford Institute of Textiles and Technology as that member of the graduating class who as an undergraduate has shown outstanding achievement in scholarship, technical ability, industry, judgment, leadership, reliability and ability to work and cooperate with others.

THE PHI PSI AWARD:

The Phi Psi Fraternity award is a beautiful pocketbook and leather case set made of ostrich leather and lined with calfskin. Each article is embossed with the coat of arms of the fraternity, also the recipient's name in gold. In addition, he is presented with a suitably engraved certificate, certifying the honor that has been given him. This award is presented, regardless of fraternity affiliations to the outstanding graduating student on the basis of his scholastic standing which includes analytical powers, accuracy and reliability. In addition he must be possessed with leadership, initiative and personality.

THE DELTA KAPPA PHI AWARD:

The Delta Chapter of the Delta Kappa Phi Fraternity, the oldest professional textile fraternity in the world, sponsors this award. This trophy and its accompanying certificate is awarded annually to the member of the graduating class who, in the opinion of the selection committee, has done the most for New Bedford Institute of Textiles and Technology in athletics during his four years here. His qualities of leadership, sportsmanship and fair play are all considered.

HONORABLE SAMUEL ROSS MEMORIAL MEDAL:

This medal is presented to the outstanding evening student for the current year. This medal is presented by Miss Beryl I. Ross in memory

of her father. Mr. Ross had in mind the value of textile education and its necessity for the mill employee to advance.

New Bedford Institute of Textiles and Technology owes a debt of gratitude to Honorable Samuel Ross who, for fifty years, served as a member of the Trustee Board, many years as its president. The records indicate that Mr. Ross originated the idea that New Bedford should have a textile school. Through his untiring efforts to have textile school facilities provided for the people of New Bedford and vicinity, a bill was filed by Mr. Ross to secure same. On June 5, 1895 Governor Frederick T. Greenhalge signed the bill providing for the establishment of New Bedford Institute of Textiles and Technology. Honorable Samuel Ross may well be called the original founder of the New Bedford Institute of Textiles and Technology.

ATHLETICS

The New Bedford Institute of Textiles and Technology, its administration and faculty, approve and encourage a full program of inter-collegiate and intramural athletics. The Athletic Association plans and provides for the fullest possible program of inter-class and inter-fraternity sports.

Varsity teams include football, baseball, basketball, tennis, and soccer. The Institute schedules for its games most of the recognized colleges of its athletic class. These schedules include many varied and interesting road trips,

The Institute is an active member in the Southern New England Coastal Conference in all sports. The southern New England Coastal Conference consists of many of the smaller colleges in Southeastern New England.

ADVANCED STANDING

Undergraduates of other recognized colleges who apply for admission to New Bedford Institute of Textiles and Technology as transfer students with advanced standing must present an official statement of honorable dismissal, a transcript of their college record, and a marked copy of the college's catalog to describe courses completed and offered for transfer credit. Only those courses will be accepted which fit the curriculum requirements of the Institute, and for which the earned grade was "C" or better.

GRADES AND GRADUATION REQUIREMENTS

1. Requirements.

The requirements for graduation are the satisfactory completion of all courses in one of the prescribed curricula of the Institute, with a total of credit points not less than the minimum number of credit hours required in the individual curriculum.

2. Grading System.

The following grading system shall be used in determining the above:

A — Excellent (90 and above)

B — Good (80-89)

C — Passing (70-79)

D — Passing without credit points (60-69)

F — Failure (below 60)

I — Incomplete—A grade of incomplete may be assigned by the instructor when a legitimate reason exists for the failure to complete the work on the date required. This grade indicates credit is withheld without prejudice to the student's rating pending completion of the required work. A grade of "I" must be removed within 30 academic calendar days after the completion of the course.

W — Withdraw—A student may voluntarily withdraw from a course without prejudice not later than the mid-semester. A withdrawal after the mid-semester is recorded as "F" or failure.

A deficiency resulting from failure may be removed by (1) repeating the course the next time it may be re-scheduled, (2) securing transfer credit in a comparable course from some other accredited institution. Only grades of "C" or better are accepted for transfer credit. Such courses for transfer must be approved in advance by the Dean of Students. When a subject which has been failed is repeated at the institute, the new grade is entered on the student's record in addition to the original grade.

3. Credits and Averages.

The Institute operates on the credit-point system. Term credits represent the number of hours of work completed successfully; credit points are determined by the grade earned; (A) 3 credit points for each credit hour; (B) 2 credit points for each credit hour; (C) 1 credit point for each credit hour. A student is not required to repeat a subject in which a grade of "D" is obtained; he receives, however, no credit points to be counted toward the minimum number required for graduation. In order to be granted a degree, a student is required to have a minimum number of credit points equivalent to the number of credit hours required for graduation in his curriculum. In other words, he must obtain an overall average of "C" or 1.00.

a—Standing for any period of time is the result obtained by dividing the number of credit points received by the student by the number of credit hours for which we was registered.

b—Transfer credits and points are not included in scholastic averages.

4. Eligibility.

No student who fails to maintain a scholastic standing of "C" or 1.00 is eligible to participate in athletics or to hold an elective office in non-athletic activities. A student's scholastic standing is computed at the mid-semester and at the close of each semester.

5. Dean's List.

A student who, at the end of a semester, has a high scholastic standing will be placed on the Dean's list. This list will be posted on the official bulletin boards.

6. Degrees with Distinction.

With highest distinction

With high distinction

With distinction

7. Attendance Regulations.

Daily attendance records are to be kept by the instructor in charge of each lecture or laboratory class. For each semester, a student is allowed three (3) credit-hour absences from each lecture or laboratory class. One (1) lecture hour is equivalent to one (1) credit hour; two (2) laboratory hours is equivalent to one (1) credit hour; that is, a student is allowed to absent himself from three (3) lecture hours or six (6) laboratory hours in any one course for each semester. Any student exceeding three (3) credit hours absences from any one class (lecture or laboratory) will be reported to the Dean of Students. Any credit hour absence immediately preceding or succeeding a holiday will be equivalent to two (2) credit hour absences. All instances of unreasonable tardiness will also be reported to the Dean of Students.

COURSES OF STUDY

DEGREE COURSES—4 YEARS

1. Mechanical Engineering
2. Electrical Engineering
3. Textile Engineering
 - a. Engineering Option
 - b. Manufacturing Option
 - c. Knitting Option
4. Textile Design and Fashion
5. Textile Chemistry

DIPLOMA COURSES—3 YEARS

1. General Textile Manufacturing
2. Chemistry, Dyeing and Finishing
3. Knit Goods Manufacturing

CERTIFICATE COURSES—2 YEARS

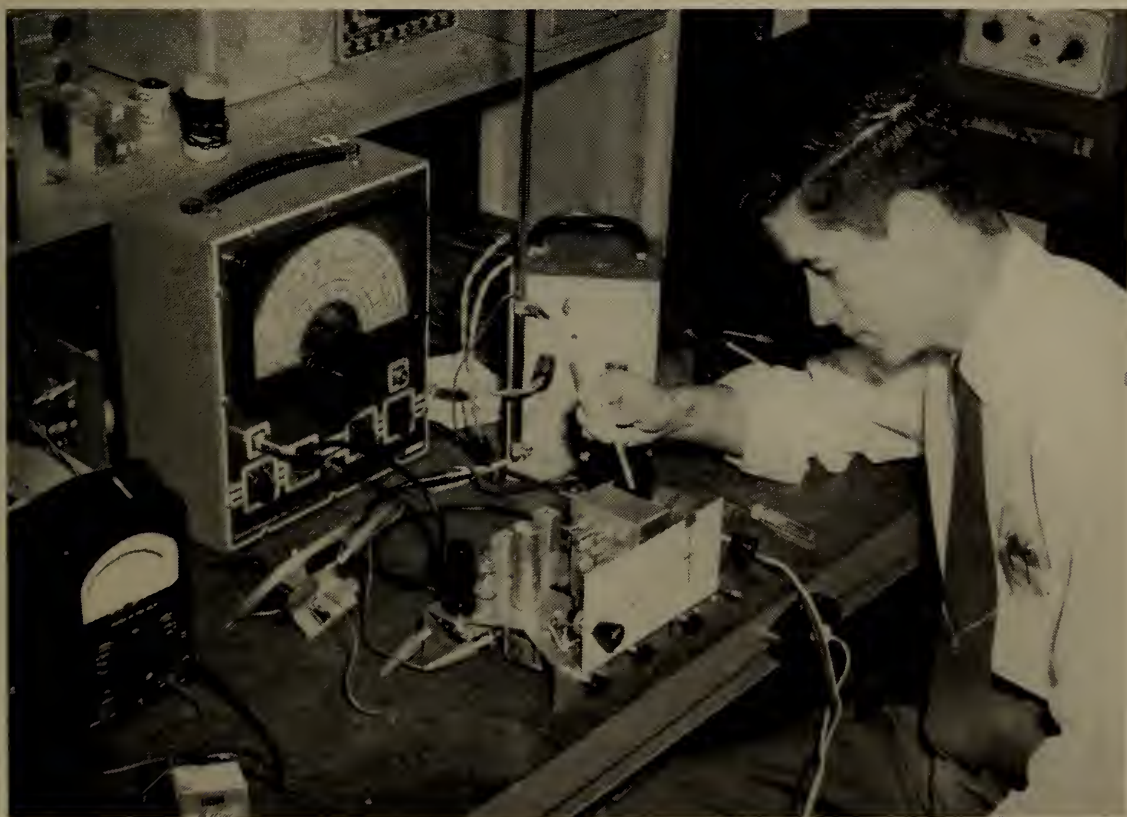
1. Textile Technology
2. SEWING MACHINE MAINTENANCE

CODE TO COURSE NUMBERS

1. Chemistry	Ch
2. Engineering	
Mechanical Engineering	ME
Electrical Engineering	EE
3. English	E
4. Humanities	H
5. Mathematics	M
6. Physics	P
7. Textile Design and Fashion	TD
8. Textile Engineering	TE



Engineering



MECHANICAL ENGINEERING

Mechanical Engineering extends into practically all branches of manufacturing and processing industries, as well as power generation, transportation, and plant construction.

In each industry there are several functions which the Mechanical Engineer may perform; that is, he may be assigned to general research, or to testing of materials or the testing of machine elements. He may be employed in the design of machinery relative to the development of manufacturing processes and plants. The Mechanical Engineer may also be engaged in the construction of machinery and in the production of goods. He may become involved in the plant efficiency or in the problems of management, or he may be attracted to the excellent opportunities in sales engineering. In most cases, placement in these fields lead to important executive posts.

The training which this Institute provides with respect to Mechanical Engineering comprises a basic study of the scientific and mathematical subjects; this includes those subjects fundamental to an engineering program, such as electronics, metallurgy, hydraulics, and electrical engineering.

The department of mechanical engineering offers exceptional opportunities for training in the fundamentals of machine design. A laboratory program including design, machine shop, and engineering laboratory experiments, provides association with the practical application of engineering operations.

Technical Report writing, industrial psychology, and labor relations complete the program of preparing the graduate for the engineering profession.

MECHANICAL ENGINEERING

FRESHMAN YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
First Semester					Second Semester				
M-101	College Math	5	0	5	M-102	College Math	5	0	5
Ch-101	Gen. Chemistry	3	2	4	Ch-102	Gen. Chemistry	3	2	4
E-101	English Comp.	3	0	3	E-102	English Comp.	3	0	3
ME-111	Eng. Drawing	0	6	3	ME-112	Eng. Drawing	0	6	3
ME-101	Machine Tool Lab.	0	3	1	ME-102	Machine Tool Lab.	0	3	1
ME-101A	Shop Theory & Calc.	2	0	2	ME-102A	Shop Theory & Calc.	2	0	2
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
15 11 20					15 11 20				

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
P-201	Physics	4	2	5	P-202	Physics	4	2	5
M-203	Diff. Calculus	3	0	3	M-204	Integral Calculus	3	0	3
ME-210	Eng. Drawing	0	7	3	ME-211	Descriptive Geom.	2	3	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
ME-212	Machine Tool Lab.	0	4	2	ME-213	Machine Tool Lab.	0	6	3
ME-212A	Shop Processes	2	0	2	ME-213A	Shop Processes	2	0	2
<hr/>					ME-214	Eng. Mechanics (Statics)	3	0	3
11 13 17					16 11 21				

JUNIOR YEAR

First Semester					Second Semester				
ME-320	Thermodynamics	3	2	4	ME-321	Thermodynamics	3	2	4
ME-310	Mechanics (Dynamics)	3	0	3	ME-316	Mechanisms	2	3	3
ME-314	Str. of Materials	3	0	3	ME-315	Str. of Materials	3	0	3
M-305	Applic. of Calc.	3	0	3	M-306	Diff. Equations	3	0	3
ME-317	Metallurgy	2	0	2	ME-318	Metallography	2	2	3
TE-384	Microscopy	2	0	2	H-340	Sociology	2	0	2
ME-322	Tool Inspection	1	3	2	EE-321	Princ. of El. Eng.	3	2	4
EE-311	Principles of El. Eng.	3	2	4					
		20	7	23			18	9	22

SENIOR YEAR

First Semester					Second Semester				
ME-421	Des. of Mach. Elem.	3	0	3	ME-422	Des. of Mach. Elem.	3	0	3
ME-423	Machine Design	0	6	3	ME-424	Machine Design	0	10	5
ME-420	Jig & Fixture Design	0	6	3	ME-426	Mech. Eng. Lab.	0	3	2
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
EE-421	Electronics	2	0	2	EE-422	Electronics	2	0	2
ME-425	Fluid Mechanics	3	0	3	H-411	Industrial Psych.	2	0	2
H-450	Labor Relations	2	0	2		Elective	2	0	2
12 12 18					11 13 18				

BACHELOR OF SCIENCE**MAJOR—ELECTRICAL ENGINEERING****FRESHMAN YEAR**

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	CR.			CL.	LAB.	CR.
<i>First Semester</i>					<i>Second Semester</i>				
M-101	College Math	5	0	5	M-102	College Math	5	0	5
Ch-101	General Chemistry	3	2	4	Ch-102	General Chemistry	3	2	4
E-101	Eng. Composition I	3	0	3	E-102	Eng. Comp. II	3	0	3
ME-111	Eng. Drawing	0	6	3	ME-112	Eng. Drawing	0	6	3
H-110	Gen. Psychology	2	0	2	H-120	Government	2	0	2
		<hr/>					<hr/>		
		13	8	17			13	8	17

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
P-201	Physics	4	2	5	P-202	Physics	4	2	5
M-203	Diff. Calculus	3	0	3	M-204	Integral Calc.	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
EE-223	Lab. Procedures	0	4	2	ME-214	Mechanics	3	0	3
ME-101	Machine Tool Lab.	0	4	2	ME-211	Desc. Geometry	2	3	3
ME-101A	Shop Theory & Calc.	2	0	2	EE-224	Lab. Proc.	0	4	2
11 10 16					14 9 18				

JUNIOR YEAR

First Semester					Second Semester				
ME-310	Thermodynamics	3	2	4	ME-321	Thermodynamics	3	2	4
ME-314	Mechanics (Dynamics)	3	0	3	ME-315	Strength of Mats.	3	0	3
M-305	Strength of Mats.	3	0	3	ME-320	Elec. Measurements	1	2	2
EE-325	Application of Calc.	2	0	2	M-306	Diff. Equations	3	0	3
EE-313	Electronics I	3	2	4	EE-326	Electronics II	3	2	4
ME-320	DC Machinery	3	2	4	EE-314	AC Machinery	3	2	4
		<hr/>					<hr/>		
		17	6	20			16	8	20

SENIOR YEAR

<i>First Semester</i>			<i>Second Semester</i>		
ME-425	Fluid Mechanics	3 0 3	H-411	Industrial Psych.	2 0 2
E-401	Report Writing	2 0 2	E-402	Public Speaking	2 0 2
EE-427	Elec. Waves & Rad.	3 2 4	EE-428	Elec. Waves & Rad.	3 2 4
EE-415	Elec. Control	2 2 3	EE-429	Radio Engineering	2 0 2
EE-416	Elec. Power Trans.	2 0 2	EE-417	EE Applications	2 0 2
EE-430	Elec. Eng. Project	0 6 3	EE-431	Elec. Eng. Project	0 6 3
H-450	Labor Relations	2 0 2	H-340	Sociology	2 0 2
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14 10 19			13 8 17		

BACHELOR OF SCIENCE**Major — Textile Engineering**

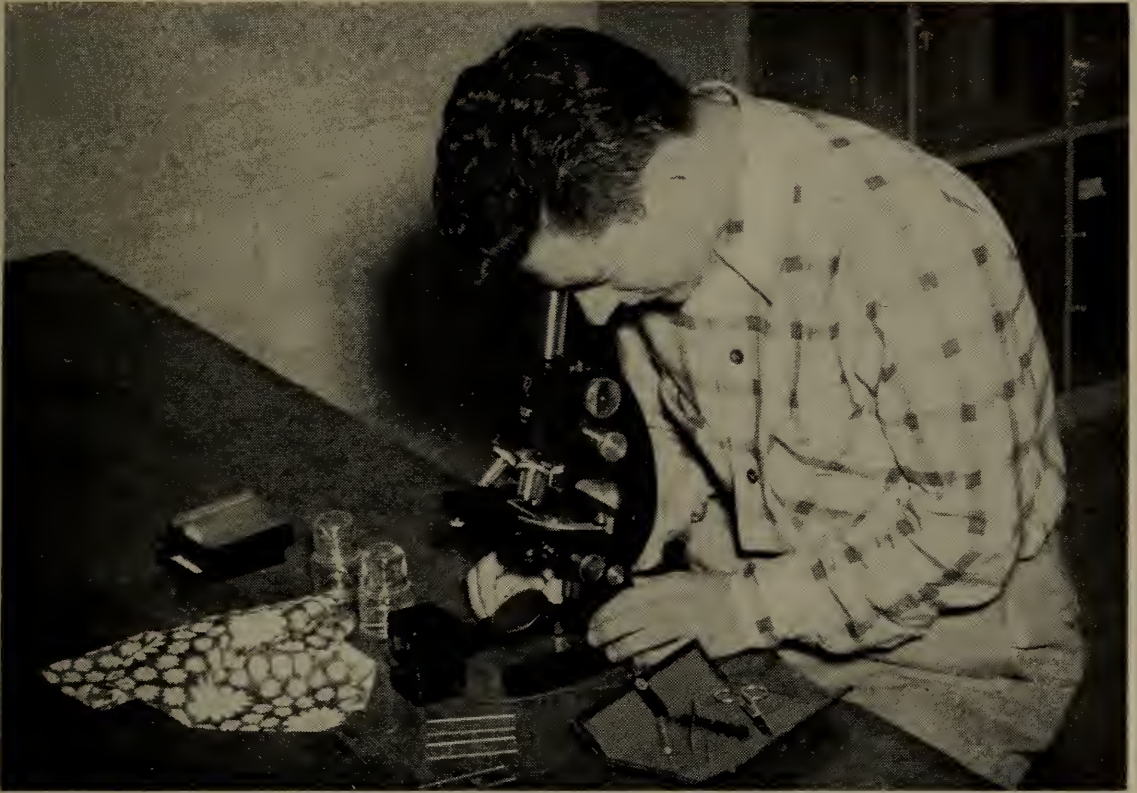
This course is especially designed to equip the student with the technical and practical background necessary for a graduate who is to enter one of the various fields of textile manufacturing. That is, yarn and fabric development and production converting, selling, testing, research, etc.

Many years of experience in the field of textile education have resulted in a systematically arranged course of study. In order that the student will thoroughly understand and intelligently apply the principles involved in modern manufacture of fabrics from both natural and man made fibres, he will, in the first two years, pursue these courses of study which are basic to all engineering, i.e., mathematics, chemistry, physics, engineering drawing, English composition, etc. In the interim he is gradually introduced to the more elementary phases of fabric construction.

He is thoroughly instructed in both the theoretical and practical phases of picking, carding, drawing and fabrication. This work begins with elementary stages in the first year and continues through four years to the most advanced stages. Designing and cloth analysis are introduced during the second year and the scope is gradually broadened through the third and fourth years. The blending of natural and man-made fibres of cotton, wool, worsted, rayons, etc., is considered. During the fourth year the student studies the processing of rayons, nylon, vinyon and other continuous filaments.

The student must complete other courses of study necessary for one who would compete successfully in the textile field. Among these are thorough courses in textile dyeing, merchandising, economics, applied electricity, machine tool laboratory practice and modern industrial plant construction.

The Manufacturing and Knitting Options comprise programs of study specially arranged for the student's choice of a major course in weaving or knitting phases, respectively. The Engineering Option has been designed in compliance with the scientific advances relative to the methods and procedures in textile manufacturing and its curriculum offers a broader basic engineering foundation than do the Manufacturing or Knitting Options.



Department of Textiles



BACHELOR OF SCIENCE

Major —Textile Engineering, Manufacturing Option

FRESHMAN YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
<i>First Semester</i>					<i>Second Semester</i>				
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chemistry	3	4	5	Ch-102	College Chemistry	3	3	4
E-101	English Composition	3	0	3	E-102	English Composition	3	0	3
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Engineering Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Machine Shop Proc.	1	2	2	ME-102	Mach. Shop Proc.	1	2	2
TE-165	Introductory Textiles	3	0	3	TE-165	Int. Textiles	2	0	2
17 10 22					16 9 20				

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-203	Diff. Calculus	3	0	3	M-204	Integral Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
Ch-201	Dyeing & Printing	2	3	3	ME-214	Statics	3	0	3
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
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16 11 22					17 8 22				

JUNIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
EE-331	Electricity	3	0	3	EE-332	Electricity	3	0	3
ME-320	Thermodynamics	3	0	3	TE-265	Theory of Color	1	0	1
ME-309	Eng. Drawing	0	3	1	H-340	Sociology	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-221	Weaving	1	3	2	TE-222	Weaving	1	3	2
TE-261	Weave Formation	1	1	2	TE-262	Weave Formation	1	1	2
TE-263	Fabric Analysis	1	1	2	TE-264	Fabric Analysis	1	1	2
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
TE-122	Warp Preparation	1	0	1	M-307	Statistics	3	0	3
TE-203	Cotton Classing	1	0	1	<hr/>				
14 12 20					15 10 20				

SENIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
H-450	Labor Relations	2	0	2	H-411	Industrial Psych.	2	0	2
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	ME-427	Mill Engineering	1	2	2
TE-301, 2	Yarn Manufacture	2	3	3	TE-303	Applied Research	0	3	2
TE-321	Weaving	1	4	3	TE-322	Weaving	1	4	3
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
TE-363	Fabric Analysis	0	2	1	TE-364	Fabric Analysis	0	2	1
Ch-402	Mfg. of Syn. Fibers	1	0	1	TE-323	Synthetics Process.	1	1	1
TE-241	Knitting	1	2	2	TE-242	Knitting	1	1	1
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13 15 20					10 17 18				

BACHELOR OF SCIENCE

Major —Textile Engineering, Engineering Option

FRESHMAN YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	CR.			CL.	LAB.	CR.
First Semester					Second Semester				
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chemistry	3	4	5	Ch-102	College Chemistry	3	3	4
E-101	English Composition	3	0	3	E-102	English Composition	3	0	3
H-110	General Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
ME-101	Machine Shop Proc.	1	2	2	ME-102	Machine Shop Proc.	1	2	2
TE-165	Introductory Textiles	3	0	3	TE-165	Intro. Textiles	2	0	2
17 10 22					16 9 20				

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-203	Diff. Calculus	3	0	3	M-204	Integral Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
Ch-201	Dyeing & Printing	2	3	3	ME-214	Statics	3	0	3
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
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16 11 22					17 8 22				

JUNIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
EE-331	Electricity	3	0	3	EE-332	Electricity	3	0	3
ME-320	Thermodynamics	3	0	3	ME-321	Thermodynamics	3	0	3
ME-310	Dynamics	3	0	3	M-307	Statistics	3	0	3
ME-309	Eng. Drawing	0	3	1	ME-316	Mechanisms	2	3	3
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-221	Weaving	1	3	2	TE-222	Weaving	1	3	2
TE-203	Cotton Classing	1	0	1	H-340	Sociology	2	0	2
TE-266	Fabric Analysis	0	2	1	<hr/>				
14 12 19					17 11 21				

SENIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
H-450	Labor Relations	2	0	2	H-411	Industrial Psych.	2	0	2
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	ME-427	Mill Engineering	1	2	2
TE-301	Yarn Manufacture	2	3	3	TE-303	Applied Research	0	3	2
TE-321	Weaving	1	4	3	TE-322	Weaving	1	4	3
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
Ch-402	Mfg. of Syn. Fibers	1	0	1	TE-323	Synthetics Proc.	1	1	1
ME-314	Strength of Mats.	3	0	3	ME-315	Strength of Mats.	3	0	3
TE-241	Knitting, General	1	1	1	TE-242	Knitting, Gen.	0	2	1
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16 12 21					12 16 20				

BACHELOR OF SCIENCE

Major —Textile Engineering, Knitting Option

FRESHMAN YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
<i>First Semester</i>					<i>Second Semester</i>				
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
Ch-101	College Chem.	3	4	5	Ch-102	College Chemistry	3	3	4
E-101	English Comp.	3	0	3	E-101	English Composition	3	0	3
H-110	Gen. Psychology	2	0	2	H-120	Government	2	0	2
ME-121	Eng. Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Machine Shop Proc.	1	2	2	ME-102	Mach. Shop Proc.	1	2	2
TE-165	Intro. Textiles	3	0	3	TE-165	Intro. Textiles	2	0	2
17 10 22					16 9 20				

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-203	Diff. Calculus	3	0	3	M-204	Integral Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
Ch-201	Dyeing & Printing	2	3	3	ME-214	Statics	3	0	3
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
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16 11 22					17 8 22				

JUNIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
EE-331	Electricity	3	0	3	EE-332	Electricity	3	0	3
ME-320	Thermodynamics	3	0	3	TE-265	Theory of Color	1	0	1
ME-309	Engineering Drawing	0	3	1	H-340	Sociology	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-241	General Knitting	1	3	2	TE-242	General Knitting	0	2	1
TE-243	Knit Fabric Anal.	1	3	2	TE-244	Knit Fabric Anal.	1	1	2
TE-245	Flat Knitting	1	2	2	TE-246	Warp Knitting	1	2	2
TE-381	Physical Testing	1	2	2	TE-247	Needle Technology	1	2	2
TE-203	Cotton Classing	1	0	1	TE-382	Physical Testing	1	2	2
<hr/>					M-307	Statistics	3	0	3
13 15 19					<hr/>				
					15 12 21				

SENIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
H-450	Labor Relations	2	0	2	H-411	Industrial Psych.	2	0	2
TE-481	Microscopy	1	2	2	TE-481	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	TE-349	Mill Engineering	1	2	2
TE-301, 2	Yarn Manufacture	2	3	3	TE-303	Applied Research	0	3	2
TE-343	Knit Fabric Anal.	1	2	2	TE-347	Supplementary Mach.	1	1	1
TE-344	Gen. Knitting	1	2	2	TE-342	Flat Knitting	2	4	4
TE-341	Warp Knitting	2	2	3	TE-348	Sewing Mach. Main.	1	1	1
TE-345	Motion & Timing	2	1	2	TE-346	Braiding Processes	1	1	1
Ch-402	Mfg. of Syn. Fibers	1	0	1	TE-323	Synthetic Process.	1	1	1
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16 12 21					12 15 18				

GENERAL TEXTILE MANUFACTURING COURSE**Diploma—3 Years****FIRST YEAR**

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
First Semester					Second Semester				
Ch-101	College Chemistry	3	4	5	Ch-102	College Chemistry	3	3	4
ME-121	Engineering Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
ME-101	Machine Shop Proc.	1	2	2	ME-102	Machine Shop Proc.	1	2	2
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
10 16 19					10 15 18				

SECOND YEAR

<i>First Semester</i>					<i>Second Semester</i>				
H-230	Economics	2	0	2	H-231	Economics	2	0	2
TE-201	Yarn Manufacture	2	2	3	TE-202	Yarn Manufacture	2	3	3
TE-221	Weaving	1	3	2	TE-222	Weaving	1	3	2
TE-261	Weave Formation	1	1	2	TE-262	Weave Formation	1	1	2
TE-263	Fabric Analysis	1	1	2	TE-264	Fabric Analysis	1	1	2
TE-241	Knitting	1	2	2	TE-242	Knitting	1	2	2
TE-381	Physical Testing	1	2	2	TE-382	Physical Testing	1	2	2
Ch-201	Dyeing & Printing	2	3	3	TE-265	Theory of Color	1	0	1
TE-122	Warp Preparation	1	0	1	H-340	Sociology	2	0	2
TE-203	Cotton Classing	1	0	1	<hr/>				
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13 14 20					12 12 18				

THIRD YEAR

<i>First Semester</i>					<i>Second Semester</i>				
EE-331	Electricity	3	0	3	EE-332	Electricity	3	0	3
TE-301, 2	Yarn Manufacture	2	3	3	TE-303	Applied Research	0	3	2
TE-321	Weaving	1	4	3	TE-322	Weaving	1	4	3
TE-361	Jacquard Designing	1	2	2	TE-362	Jacquard Designing	1	2	2
TE-363	Fabric Analysis	0	2	1	TE-364	Fabric Analysis	0	2	1
TE-481	Microscopy	1	2	2	TE-482	Microscopy	1	2	2
Ch-401	Textile Finishing	2	0	2	H-411	Industrial Psychology	2	0	2
Ch-402	Mfg. of Syn. Fibers	1	0	1	TE-323	Synthetics Processing	1	1	1
ME-309	Eng. Drawing	0	3	1	ME-427	Mill Engineering	1	2	2
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KNIT GOODS MANUFACTURING COURSE**Diploma—3 Years****FIRST YEAR**

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	CR.			CL.	LAB.	CR.
First Semester					Second Semester				
Ch-101	Chemistry	3	4	5	Ch-102	Chemistry	3	3	4
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Draw.	0	4	2
ME-101	Machine Shop Processes	1	2	2	ME-102	Machine Shop Processes	1	2	2
TE-101	Yarn Manufacture	2	2	3	TE-102	Yarn Manufacture	2	2	3
TE-123	Weaving	1	2	2	TE-124	Weaving	1	2	2
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
10 16 19					10 15 18				

SECOND YEAR

<i>First Semester</i>			<i>Second Semester</i>		
H-230	Economics	2 0 2	H-231	Economics	2 0 2
TE-201	Yarn Manufacture	2 2 3	TE-202	Yarn Manufacture	2 3 3
Ch-201	Dyeing & Printing	2 3 3	TE-265	Theory of Color	1 0 1
TE-203	Cotton Classing	1 0 1	H-340	Sociology	2 0 2
TE-241	Gen. Knitting	1 3 2	TE-242	General Knitting	0 2 1
TE-243	Knit Fabric Analysis	1 2 2	TE-244	Knit Fabric Anal.	1 1 2
TE-245	Flat Knitting	1 2 2	TE-246	Warp Knitting	1 2 2
TE-381	Physical Testing	1 2 2	TE-247	Needle Technology	1 2 2
			TE-382	Physical Testing	1 2 2
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THIRD YEAR

<i>First Semester</i>			<i>Second Semester</i>		
EE-331	Electricity	3 0 3	ME-332	Electricity	3 0 3
TE-301, 2	Yarn Manufacture	2 3 3	TE-303	Applied Research	0 3 2
ME-309	Engineering Draw.	0 3 1	TE-349	Mill Engineering	1 2 2
Ch-401	Textile Finish.	2 0 2	H-411	Industrial Psych.	2 0 2
TE-481	Microscopy	1 2 2	TE-482	Microscopy	1 2 2
TE-343	Knit Fabric Analysis	1 2 2	TE-347	Supplementary Machines	1 1 1
TE-344	General Knitting	1 2 2	TE-342	Flat Knitting	2 4 4
TE-341	Warp Knitting	2 2 3	TE-348	Sewing Mach. Maint.	1 1 1
TE-345	Motion & Timing	2 1 2	TE-346	Braiding Processes	1 1 1
Ch-402	Mfg. of Syn. Fibers	1 0 1	TE-323	Synthetics Processing	1 1 1
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TEXTILE TECHNOLOGY COURSE**Certificate—2 Years****FIRST YEAR**

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
<i>First Semester</i>					<i>Second Semester</i>				
Ch-101	Chemistry	3	4	5	Ch-102	Chemistry	3	3	4
TE-182	Physical Testing	1	3	2	TE-183	Physical Testing	1	3	2
TE-184	Microscopy	1	2	2	TE-185	Microscopy	1	2	2
TE-161	Weave Formation	1	1	2	TE-162	Weave Formation	1	1	2
TE-163	Fabric Analysis	1	1	2	TE-164	Fabric Analysis	1	1	2
TE-167	Fabric Class	2	0	2	TE-168	Fabric Class.	2	0	2
TE-103	Yarn Manufacture	1	1	1	TE-241	Knitting	1	2	2
TE-125	Weaving	1	1	1	TE-125	Weaving	1	1	1
TE-121	Yarn Calculations	1	0	1	TE-122	Warp Preparation	1	0	1
					TE-265	Theory of Color	1	0	1
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SECOND YEAR

<i>First Semester</i>			<i>Second Semester</i>		
TE-281	Physical Testing	2 4 4	TE-282	Physical Testing	2 4 4
TE-283	Microscopy	0 3 2	TE-284	Microscopy	0 3 2
TE-261	Weave Formation	1 1 2	TE-262	Weave Formation	1 1 2
TE-263	Fabric Analysis	1 1 2	TE-264	Fabric Analysis	1 1 2
TE-361	Jacquard Designing	1 2 2	TE-362	Jacquard Designing	1 2 2
TE-225	Weaving	1 1 1	TE-225	Weaving	1 2 2
Ch-201	Dyeing & Printing	2 3 3	Ch-205	Screen Printing	1 2 2
TE-365	Textile Styling	0 2 1	Ch-202	Quantitative Analysis	2 4 4
TE-203	Cotton Classing	1 0 1			
TE-342	Knitting	0 2 1			
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SEWING MACHINE MAINTENANCE COURSE

Certificate—2 Years

FIRST YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
<i>First Semester</i>					<i>Second Semester</i>				
ME-101	Machine Shop	0	4	2	ME-102	Machine Shop	0	4	2
ME-101	Shop Theory	1	0	1	ME-102	Shop Theory	1	0	1
TE-250	Machine Classification	1	6	3	TE-251	Machine Classification	1	6	3
TE-253	Time Study—Cutting	2	4	3	TE-254	Time Study—Cutting	2	4	3
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
TE-255	Timing & Assembly	2	6	4	TE-256	Timing & Assembly	2	6	4

BACHELOR OF SCIENCE

Major —Textile Design and Fashion

In keeping with the current scientific advancement in American textiles, and to fulfill the requirement relative to competent textile designers, the New Bedford Institute of Textiles and Techonogy has added a new Department of Studies in Textile Design and Fashion.

Spectacular advancements in textile technology and engineering during the past decade point up a paramount need for a co-ordination of the special techniques of fabric and garment designers.

The styling, designing, and development of fabrics and textures now require an extensive technical knowledge on the part of those concerned with the artistic and functional elements of textile materials.

This course of study has foundation design and drawing as the principal subjects in the Freshman year. Other courses in the first year include lettering, fundamental textile subjects, U. S. History, English and Sociology.

Courses in applied textile design, art history, drawing and painting, plus theory and practical studies of textile manufacturing, dyeing and finishing comprise the major part of the second, third and fourth years.

Courses in dress design, pattern drafting and fashion illustration are given in the Junior and Senior years. Academic subjects (required for a degree) are included throughout the curriculum.

Other than in the Freshman year, projects are required whereby the student creates and executes his own original designs, in both fabric and apparel.

BACHELOR OF SCIENCE

Major —Textile Design and Fashion

FRESHMAN YEAR

No.	TITLE	HOURS		No.	TITLE	HOURS	
		CL.	LAB. CR.			CL.	LAB. CR.
<i>First Semester</i>				<i>Second Semester</i>			
TD-101	Nature drawing	3	2	TD-102	Nature Drawing	3	2
TD-103	Life Drawing	3	1	TD-104	Life Drawing	3	1
TD-105	Drawing & Painting	3	1	TD-106	Drawing & Painting	3	1
TD-107	Design	10	5	TD-108	Design	10	5
TD-113	Lettering	2	2	TD-110	Art & Civilization	2	2
TD-109	Art & Civilization	2	2	TD-112	Anatomy	1	1
TD-111	Anatomy	1	1	E-102	English Comp.	3	3
E-101	English Composition	3	3	H-120	Government	2	2
H-110	Gen. Psychology	2	2	TE-169	Fabric Classification	1	1
TE-166	Introduc. Textiles	1	1	ME-127	Theory of Projection	2	2
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SOPHOMORE YEAR

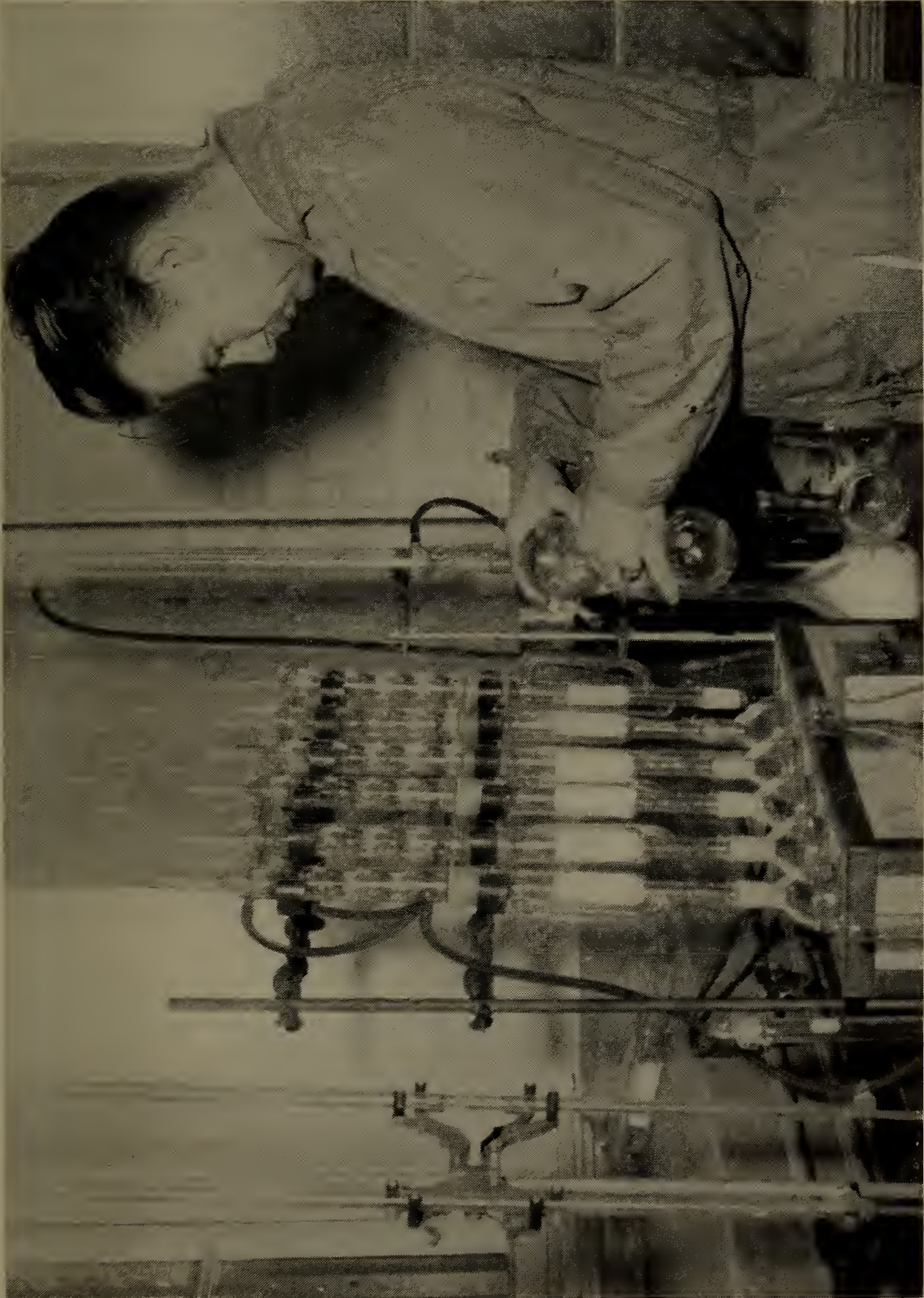
<i>First Semester</i>			<i>Second Semester</i>		
TD-202	Life Drawing	3 1	TD-203	Life Drawing	3 1
TD-204	Drawing & Painting	3 1	TD-205	Drawing & Painting	3 1
TD-201	Nature Drawing	3 2	TD-210	Fashion Illustration	2 1
TD-206	History of Art	2 2	TD-207	History of Art	2 2
TD-208	Textile Design	4 3	TD-209	Textile Design	4 3
Ch-203	Screen Printing	4 3	Ch-204	Screen Printing	4 3
TE-161 & 163	Weave Formation & Fabric Analysis	4 3	TE-162 & 164	Weave Formation & Fabric Analysis	4 3
TE-267	Handloom Weaving	4 2	TE-268	Handloom Weaving	4 2
TE-103	Yarn Manufacture	1 1	TE-225	Power Weaving	2 1
H-230	Economics	2 2	H-231	Economics	2 2
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JUNIOR YEAR

<i>First Semester</i>			<i>Second Semester</i>		
TD-301	Life Drawing	4 2	TD-303	Textile Design	4 3
TD-302	Textile Design	4 3	TD-305	History of Art	2 2
TD-304	History of Art	2 2	TD-307	Screen Printing	4 3
TD-306	Screen Printing	4 3	TD-309	Handloom Weaving	4 2
TD-308	Handloom Weaving	4 2	TD-311	Fashion Illustration	3 2
TD-310	Fashion Illustration	3 2	TD-313	Fashion Design	4 3
TD-312	Fashion Fundamentals	4 3	TE-362	Jacquard Designing	3 2
TE-361	Jacquard Designing	3 2	TE-327	Power Weaving	2 1
TE-326	Power Weaving	2 1	H-340	Sociology	2 2
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SENIOR YEAR

<i>First Semester</i>			<i>Second Semester</i>		
TD-401	Textile Design	6 4	TD-402	Textile Design	8 6
TD-405	Fashion Illustration	4 2	TD-406	Fashion Illustration	4 2
TD-407	Fashion Design	4 3	TD-408	Fashion Design	4 3
TD-403	Handloom Weaving	4 2	TD-404	Handloom Weaving	4 2
E-401	Report Writing	2 2	E-402	Public Speaking	2 2
H-412	Applied Psychology	2 2	TD-409	Degree Project	6 3
TE-410	Knitting	2 1	Electives		3
TE-182	Textile Testing	2 1			
Ch-403	Textile Finishing	2 2			
	Elective	2			
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Chemistry

DEPARTMENT OF CHEMISTRY
BACHELOR OF SCIENCE
MAJOR —TEXTILE CHEMISTRY

Through a well balanced program of training in the fundamental sciences and the humanities, together with the practical application of the principles involved, this department trains students for careers in the chemical industries, particularly in the field of textile chemistry, dyeing and finishing.

The curriculum provides a sound fundamental training in the fields of inorganic, organic, analytical and textile chemistry. Courses in mathematics, physics, history, economics, sociology, merchandising and technical writing yield a well-rounded program which prepares the student for industrial professions or for graduate training.

BACHELOR OF SCIENCE

Major —Textile Chemistry

FRESHMAN YEAR

No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	Cr.			CL.	LAB.	Cr.
First Semester					Second Semester				
Ch-111	Inorganic Chemistry	3	6	6	Ch-112	Inorganic Chem. II	3	0	3
M-101	College Math I	5	0	5	M-102	College Math II	5	0	5
E-101	English Composition I	3	0	3	E-102	English Comp. II	3	0	3
ME-121	Eng. Drawing	0	4	2	ME-122	Eng. Drawing	0	4	2
H-110	Gen. Psychology	2	0	2	H-120	Government	2	0	2
TE-166	Intro. Survey of Textiles	1	0	1	TE-181	Fiber Technology	1	0	1
					Ch-114	Stoichiometry	2	0	2
					Ch-113	Qual. Analysis	2	4	4
14 10 19					18 8 22				

SOPHOMORE YEAR

<i>First Semester</i>					<i>Second Semester</i>				
Ch-211	Elem. Quant. Anal.	2	4	4	Ch-212	Elem. Quant. Anal.	2	4	4
Ch-221	Intro. Textile Chem.	2	4	4	Ch-222	Elem. Dyeing	2	4	4
Ch-231	Elem. Organic Chem.	2	4	4	Ch-232	Elem. Org. Chem. II	2	4	4
P-201	Physics	3	2	4	P-202	Physics	3	2	4
M-203	Diff. Calculus	3	0	3	M-204	Int. Calculus	3	0	3
H-230	Economics	2	0	2	H-231	Economics	2	0	2
TE-269	Fabric Classification	1	0	1	TE-270	Fabric Classification	1	0	1
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JUNIOR YEAR

<i>First Semester</i>					<i>Second Semester</i>				
Ch-311	Instrumental Anal.	2	4	4	Ch-312	Inst. Anal. II	2	4	4
Ch-331	Adv. Org. Chem.	2	6	5	Ch-321	Adv. Dyeing I	1	6	4
Ch-341	Textile Print. I	2	4	4	Ch-342	Textile Print. II	2	4	4
H-450	Labor Relations	2	0	2	Ch-352	Microbiology	2	4	4
TE-103	Cotton Manufacturing	1	0	1	H-340	Sociology	2	0	2
TE-241	Knitting	1	0	1	TE-265	Color	1	0	1
Ch-351	Bacteriology	2	4	4	TE-481	Microscopy	1	2	2
TE-383	Testing	1	2	2					
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SENIOR YEAR

First Semester					Second Semester				
Ch-411	Physical Chemistry	3	3	4	Ch-412	Physical Chemistry II	3	3	4
Ch-421	Advanced Dyeing II	1	3	2	Ch-431	Chem. of Text. Fibers	3	2	4
Ch-441	Indus. Chem. Anal.	1	6	4	Ch-442	Ind. Chem. Anal. II	1	6	4
Ch-451	Textile Finishing	1	6	4	Ch-452	Textile Finish. II	1	6	4
E-401	Report Writing	2	0	2	E-402	Public Speaking	2	0	2
H-412	Applied Psychology	2	0	2					
10 18 18					10 17 18				

CHEMISTRY, DYEING AND FINISHING COURSE**Diploma—3 Years****FIRST YEAR**

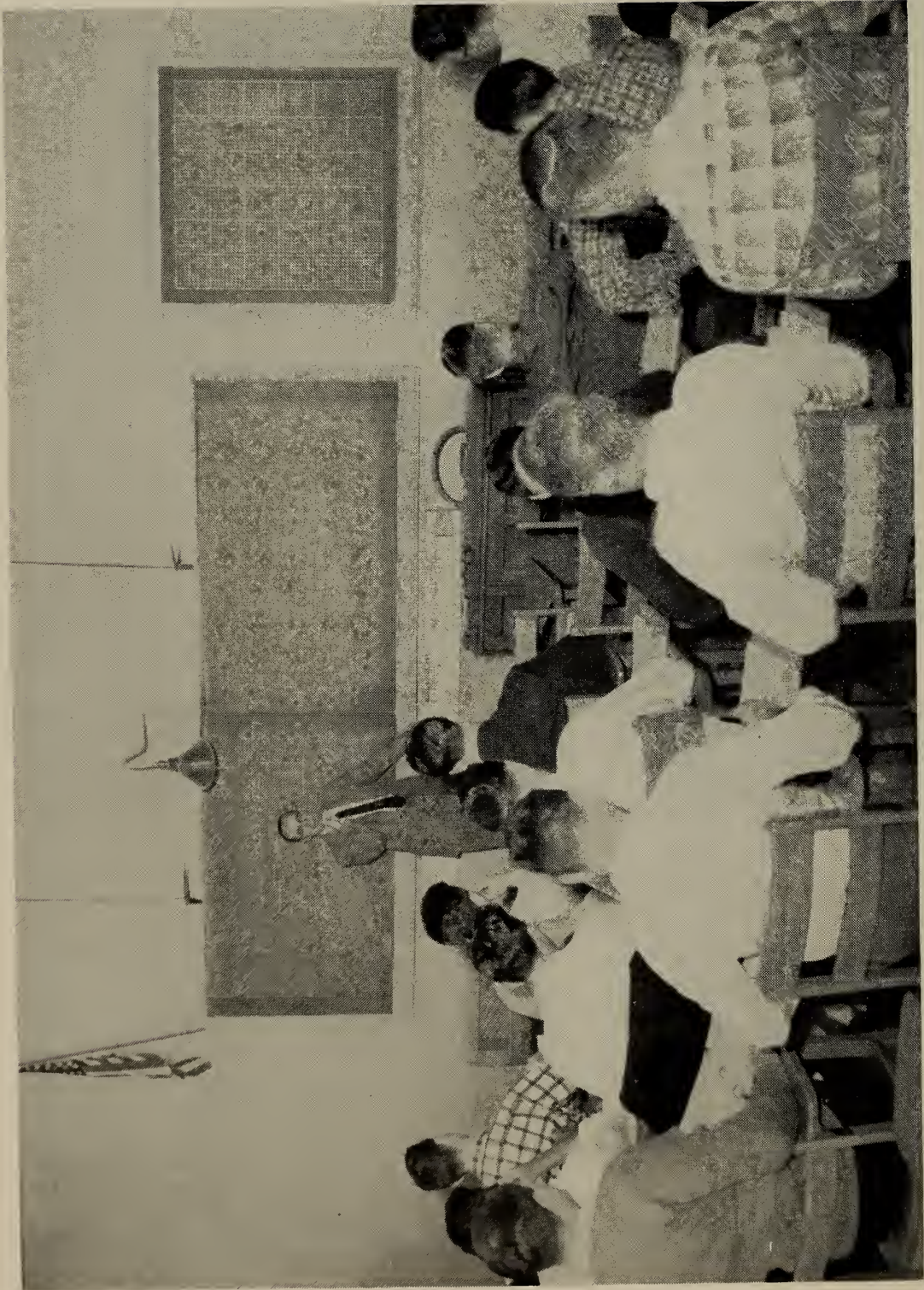
No.	TITLE	HOURS			No.	TITLE	HOURS		
		CL.	LAB.	CR.			CL.	LAB.	CR.
<i>First Semester</i>					<i>Second Semester</i>				
M-101S	Elementary Math.	4	0	4	M-102S	Elementary Math.	4	0	4
P-201S	Elementary Physics	2	0	2	P-202S	Elem. Physics	2	0	2
ME-121	Engineering Drawing	0	4	2	ME-122	Engineering Drawing	0	4	2
Ch-101	General Chemistry	2	4	4	Ch-102	Inorganic Chemistry	5	6	8
H-230	Economics	2	0	2	H-231	Economics	2	0	2
TE-166	Intro. Survey of Text.	1	0	1	H-120	Government	2	0	2
H-110	General Psychology	2	0	2					
		13	8	17			15	10	20

SECOND YEAR

<i>First Semester</i>					<i>Second Semester</i>				
Ch-231	Organic Chemistry	2	4	4	Ch-232	Organic Chemistry	2	4	4
Ch-211	Elem. Quant. Anal.	2	4	4	Ch-212	Elem. Quant. Anal.	2	4	4
Ch-222	Elementary Dyeing	2	4	4	Ch-321	Dyeing	2	4	4
TE-219	Fabric Classification	1	1	1.5	TE-220	Fabric Classification	1	1	1.5
					Ch-113	Qualitative Analysis	2	4	4
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THIRD YEAR

<i>First Semester</i>					<i>Second Semester</i>				
Ch-341	Textile Printing I	2	6	5	Ch-421	Advanced Dyeing II	1	6	4
Ch-331	Organic Chemistry	2	6	5	Ch-342	Textile Printing II	2	4	4
Ch-451	Textile Finishing	1	6	4	TE-265	Color	1	1	1.5
Ch-441	Chem. Analysis	1	6	4	Ch-452	Textile Finishing	1	6	4
E-201	Report Writing	2	0	2	Ch-442	Chem. Analysis	1	6	4
					E-432	Public Speaking	2	0	2
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Humanities

DESCRIPTION OF COURSES

DEPARTMENT OF TEXTILES

DIVISION OF YARN MANUFACTURE

TE-101 Pickers and Cards

Cotton yarn mill machinery. Lists of processes in cotton mills for different numbers of yarn. Proper sequences of processes.

Objects of blending cotton. Methods of mixing same.

Methods of blending and mixing the different types of synthetic fibers.

Bale breakers and opening and cleaning machinery. Picker rooms. Automatic feeders, construction, capacity, and suitability for the purpose intended. Various styles of openers, their use and object. Connection of feeders to openers. The various types of cleaning trunks.

Calculations in connection with openers, breaker pickers, intermediate and finisher pickers, and single process pickers with blending reserve.

Construction of aprons, beaters, bars, screens, fans, lap heads, eveners motions, measuring motions, etc. The setting and adjusting of the different parts of these machines.

The revolving top flat card. Its principal parts described, including feed, lickering cylinder doffer, coiler, screens and flats. Different setting arrangements. Calculations in connection with all types of cotton cards.

Clothing, Grinding, setting and stripping cards.

TE-102 Cards and Drawing Frames

Study of Cards continued.

Drawing frame roller drafting, setting and calculations. Method of arranging and constructing drawing, frames, its use and objects. Gearing, types of weighing and stop motions. Varieties of rolls.

TE-201 Roving and Spinning Frames

Slubbers, first and second intermediates, inter-draft, long draft, roving frames and jack frames. The construction and use of these machines. Calculations in connection therewith. Changing, fixing and re-setting frames, etc.

The ring spinning frame, its construction and use. Its principal parts, as creels, rolls, rings, travelers, speeds, builder motions, calculations, etc.

TE-202 Advanced Calculations and Costs

Figuring the number of doublings and amount of draft required from picker to spinning frames.

Calculations for organization of machinery required for different counts of yarn. Amount of production and cost of production of yarn.

Practice work consists of running work from picker to spinning frames.

TE-301 Twisters

The object of twisting. Wet and Dry Twisting. The different methods of preparing yarns for twisting. The direction and amount of twist in

different ply and cord threads. Size of rings and travelers for the different counts of yarn. Calculations for twist and production.

TE-302 Combing

Sliver and Ribbon Lap machines. Construction of the different types of Combers. Methods of setting, adjusting and operation of these machines, and calculations in connection therewith.

TE-303 Applied Research

Research as applied to one or more machines consists of running original work, in laying out the machines to be used for the different types of yarns, as regards speeds, weights, etc. from the raw stock to the finished yarn. Tests at the different processes. Methods of testing. Blending and running all kinds of natural and synthetic fibers.

TE-203 Cotton Classing

Different species of cotton plants. Cultivation of cotton. The different varieties of cotton and the classes of goods for which they are best adapted. Cotton picking, ginning and marketing. The selection of cotton for different classes of goods. Cotton grading and stapling.

TE-109 Yarn Manufacturing

Yarn manufacture is the name assigned to a course of lectures given to the first year students in Textile Technology, the third year students in Chemistry and the first year students in Machine Design, so that they may become acquainted with the methods employed in the manufacture of yarn and cloth. The various machines are thoroughly described and the methods of using them discussed in the lecture room. Because of the limited amount of time allowed for this subject, the students are not taught to operate the machines, but are given an opportunity to examine them at rest and later to observe them in operation.

DIVISION OF WEAVING

TE-121 Yarn Calculations

Methods to establish the Count, Weight, or Length in all the different types of fibers are given with examples. Equivalent yarn numbering systems. New Fiber systems. Suggested system for universal numbering of all yarns.

TE-122 Warp Preparation

Spooling or winding—The various types of packaging explained on the machine with respect to cost and manner of usage in the next preparatory manufacturing step.

Warping—High speed warping from cones, and slow speed from spools is taught with the necessary instructions for production and cost figuring. Warping with the silk system.

Slashing—The need for sizing. Methods of sizing. Difference in requirements as to heat, kind of size, and methods of operation with the various kinds of fibers. Cotton methods. Rayon methods. Silk methods.

TE-123 Plain Looms

The primary movements required in weaving. Elementary power loom construction. Shedding by cams. Plain cams. Twill and Satin cams. Side cams. Split time cams. Double set cams. Construction of cams for special conditions. Timing of cams and its effect on the cloth. Methods of calculations for gearing of different cam drives. Picking motions.

Bat-wing and cone motions in detail from a practical weaving basis.

Shuttles—Different kinds of shuttles. Woods and other materials used in their manufacture. Care and treatment of shuttles.

Protector motions.

Reeds—Calculations for reeds. Care of reeds.

Take-up motions—Various kinds, with the necessary calculations to insure the greatest range of use.

Filling stop motions of all types.

Temples—The various types and makes and their distinctive features. The operation and maintenance of plain cam looms. Starting of warps. Faults and remedies in weaving and loom fixing.

Discussions on general loom accessories.

TE-124, 221 Dobby and Box Looms

Looms with a much greater range of pattern than the cam loom. The dobbie shedding machine. Dobby construction, with the timings and settings necessary for correct operation. Single and Double Index. Chain pegging and reading. Box looms. Different kinds of drop box mechanisms. Practical settings, with the best operational methods for the different types. Multiplier motions as applied to box looms. Dobby box looms with special weave mechanisms for such weaves as handkerchiefs, terry and other toweling, curtains, etc.

TE-222 Automatic Looms

Draper looms of numerous models. Maintenance, operation, and possibilities of the different models of Draper looms. Practical settings for the feeler and transfer mechanisms. Warp stop motions. Various types of mechanical beam tension control.

Crompton and Knowles multiple box looms, with automatic selective filling transfer. All of the required settings for complete loom operation. Chain building and co-ordination for varied patterns. Stafford shuttle changing looms. All settings for the shuttle changing mechanisms explained in detail.

Student assembly and operation of all the above looms.

TE-321 Jacquards

The principle of construction of Jacquard machines. Single and double lift machines. Jacquard machines for special purposes. Principles of harness tying. Layover, Center tie, etc. Care and treatment of harness lines. Practical work in cutting cards and weaving the student's own designs. Double cylinder Jacquard construction and operation with a 4 x 1 automatic box loom and center filling motion.

TE-322 Special Mechanisms and Costing

Dobby looms with leno mechanisms for the weaving of all Pattern lenos. Requirements and methods for the weaving of lenos on Jacquard looms.

Analysis and application of direct and indirect weave room costs.

Weaving yarn requirements and the preparatory machinery necessary to produce it.

Weave room operation and management under different product labor, and power conditions.

Room lay-outs best suited to different kinds of product.

TE-323 Processing of Synthetic Yarns

This course covers the various conditioning and preparatory process applied to the synthetic yarns which are necessary in the production of synthetic fabrics. These processes include soaking, spooling, throwing, winding, warping and slashing of synthetic yarns.

TE-125, 225, 326, 327 Weaving

This course comprises the fundamentals of the power-loom with particular emphasis on the capabilities of the various types of loom. The student is taught the application of plain, dobby and Jacquard looms with reference to the production of different kinds of fabrics. Limitations as to the use of color, regarding costs in the creation of new woven materials, is a part of the course. The student actually weaves his original patterns on the power looms.

DIVISION OF PHYSICAL TESTING AND MICROSCOPY**TE-181 Fibre Technology**

An illustrated lecture course on the basic and outstanding microscopic characteristics and physical properties of the various textile fibres. Microphotographic slides of all fibres discussed are used as illustrations; technical data is presented and discussed. The fibres included represent selected specimens of the natural vegetable fibers, the natural animal fibers, the regenerated rayons, the protons, the synthons, and the mineral fibers.

TE-182, 183 Physical Testing

Moisture—Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Analysis of fabrics for type, construction, yarn sizes, weight and identification of natural and synthetic fibers, with most work being done from small swatches of fabric. Analysis of fiber blended fabrics for type and percent of mixtures. Physical test on fabrics for tensile strength, weight, bow, crimp, tearing resistance, finishing materials, water repellancy, shrinkage and abrasion.

Physical tests on spun and continuous filament yarns with special emphasis on various twist, constructions, weight (number), breaking strength (skein and single end), grades (quality), and methods of determination.

TE-184, 185, 481, 482 Microscopy

A course of study in the use and manipulation of the microscope, elementary optics as applied to the microscope, illumination and accessory equipment and its uses.

Micrometry and measurement techniques and the calibration and use of the different types of ocular micrometers.

Specimen mounting and identification of all various textile fibers. Cross sectioning by several methods with emphasis on the use of the fiber microtome.

Recording Data—Written records, drawing from observation and camera lucida. Photomicrographic apparatus and photomicrographic and dark room technique including adjustment of apparatus, lighting and photographic specimens.

Analysis of fiber blended fabrics for identification and percent of various fibers. Wool grading by the micron diameter method. Denier determination of cut staple synthetic fibers and other special uses of the microscope to the textile technologist.

TE-281, 282 Physical Testing

Cotton Fiber Technology—Length arrays by the Suter-Webb fiber sorter and Fibrograph. Fiber tensile strength by the Pressley flat bundle method. Fineness and maturity.

Testing Project—The student is assigned a testing project on a series of fabrics which consist of testing for comparative purposes. Results are evaluated and presented in thesis form.

TE-283, 284 Photomicroscopy

The use of photomicrographic apparatus and photomicrographic and dark room techniques including adjustments of apparatus, lighting and photographing specimens. Includes work on fabric, yarns, fibers, and all types of textile specimens. Students are assigned lengthy projects and are left to their own initiative.

TE-381, 382 Physical Testing

Moisture — Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Cotton Fiber Technology — Length arrays by the Suter-Webb fiber sorter and the Fibrograph. Fiber tensile strength by the Pressley flat bundle method. Fineness and maturity.

Physical test on spun and synthetic yarns, including weight (number), twist, combination yarns, breaking strength (skein and single end), yarn evenness, grades (quality), and their determinations.

Physical tests on fabrics for construction, dimensions and weight, tensile strength (grab and strip), crimp, bow, finishing materials, fiber composition and blends, water repellancy, shrinkage, abrasion and wear resistance.

Presentation of data. Statistical analysis and preparations of control charts.

TE-383 Physical Testing

Moisture — Relative humidity, regain, moisture content determinations and their effects on textile materials from a weight and testing viewpoint.

Physical tests on fabrics for construction, dimensions and weight, tensile strength (grab and strip), crimp, bow, finishing materials, fiber composition and blends, water repellancy, shrinkage, abrasion and wear resistance. Sample analysis from small swatches. Blends.

TE-384 Microscopy

A course of study in the use and manipulation of the microscope, elementary optics as applied to the microscope, illumination and accessory equipment and its uses. Special attention is given to the metallurgical microscope.

Micrometry and measurement techniques and the calibration and use of different types of micrometers.

Recording Data — Written records, drawing from observation and camera lucida. Photomicrographic apparatus and photomicrographic and dark room technique including adjustment of apparatus, lighting and photographing of metallurgical specimens.

DEPARTMENT OF ENGINEERING

DIVISION OF MECHANICAL ENGINEERING

ME-101 - ME-110 Machine Shop Processes

Consists of a thorough study of the machinery used in the present day machine shop. Instruction is given in the use of the fundamental machine tools including the engine lathe, milling machine, cylindrical grinder, planer, shaper, and drill press. This course is supplemented by lectures in shop theory and classes in shop calculations.

ME-111 Engineering Drawing

The basic principles of engineering drawing including the use and care of drawing instruments, freehand lettering, theory of orthographic projection, making of multi-view drawings, sectional views, and auxiliary views, dimensioning, fits and tolerances, screw fasteners, and technical sketching. (0-6-3)

ME-112 Engineering Drawing

A continuation of ME-111 covering the making of shop and assembly drawings of machine parts. (0-6-3)

Prerequisite: ME-111

ME-121 Engineering Drawing

For students in the Textile Engineering and Textiles Chemistry courses (same as ME-111) (0-4-2)

ME-122 Engineering Drawing

A continuation of ME-121 above, and similar to ME-112.

Prerequisite: ME-121 (0-4-2)

ME-127 Theory of Projection

Since drawing is a graphic language that is universally used by engineers, designers, and illustrators to describe a size, a shape, or the layout of an object, this course has been developed to provide a basic understanding of the methods used to prepare such drawings.

The course includes orthographic, axonometric, oblique and perspective projection.

ME-210 Engineering Drawing

Complete detail and assembly drawings of small machines with dimensions and tolerances, notes, and all information necessary for production drawings.

An advanced course in the drafting of such machine elements as spur gears, worm and bevel gears, bearing installations, and cams and linkages. (0-7-3)

Prerequisite: ME-112

ME-211 Descriptive Geometry

The principles of descriptive geometry as applied to the solution of problems in engineering construction. Consists of such topics as intersections of lines and planes, revolution, and concurrent force problems. (2-3-3)

Prerequisite: ME-112

ME-212 - ME-213 Machine Tool Manufacturing

Continued instruction on the fundamental machine tool operations involving the lathe, planer, milling machine, grinder, and turret lathe. The application of jigs, fixtures, and special tools and attachments to mass production methods.

Lectures, demonstrations and laboratory exercises on heat treatments and machinability of carbon and alloy steels.

ME-214 Engineering Mechanics (Statics)

Composition and resolution of forces the free body diagram conditions of equilibrium; analytical and graphical solution of problems; friction; centroids and center of gravity; moment of inertia. (3-0-3)

Prerequisite: ME P-201

ME-309 Engineering Drawing

A course arranged for the students of textile engineering consisting of a study of gears and cams as applied to textile machinery. (0-3-1)

Prerequisite: ME-122

ME-310 Engineering Mechanics (Dynamics)

The kinematics and kinetics of translation, rotation, and general plane motion; work; energy; power; impulse and momentum.

Prerequisite: M-4, M-204, P-201

ME-314 - ME-315 Strength of Materials

Elementary stresses and strains; stresses due to change of temperature; combined stresses; riveted joints; strength and deflection of beams; longitudinal shear in beams; statically indeterminate beams; columns; reinforced concrete beams; strain, energy and impact loading. (3-0-3) (3-0-3)

Prerequisite: ME-214

ME-316 Mechanism

A study of the operating principles of machine parts to determine displacement, velocity, and acceleration by analytical and graphical methods. Emphasis is upon linkages, gears, gear trains, cams, belts and pulleys, chain drives, variable speed drives, reciprocating mechanisms. (2-3-3)

Prerequisite: ME-210

ME-317 Metallurgy

A lecture course on the various processes of working metals and separating them from their ores. (2-0-2)

Prerequisite: Ch-102

ME-318 Metallography

An elementary course that introduces the student to the effect that various alloying elements have on the structure and properties of metals, especially iron. Starting with the construction of the iron-carbon diagram, the student learns to interpret and use the diagram and the phase rule in practice. The laboratory work combines actual metallographic-microscopic examination of specimens of various simple alloys prepared by the student with class discussion of the meaning of the micro-photos. (2-2-3)

Prerequisite: ME-317

ME-320 Applied Thermodynamics

A course presenting the fundamental concepts of thermodynamics for the engineering majors. The course includes a study of the First Law of Thermodynamics, the General Energy Equation, properties of the common working substances, the Second Law of Thermodynamics, analysis of cycles, and internal combustion engines. (3-2-4)

Prerequisites: M-4, P-1

ME-321 Applied Thermodynamics

A continuation of ME-320. The course includes a study of vapors, Mollier diagrams, vapor cycles, steam power plants, refrigeration, and heat transfer.

Prerequisite: ME-320

ME-322 Tool Inspection

A careful study of the use and application of precision instruments as applied to tool inspection. Includes both lectures and laboratory exercises in the use of precision gages, size block, shadow graphs, hardness testers, sine bars, and other precision instruments (1-3-2)

Prerequisite: ME-213

ME-420 Jig, Fixture and Tool Design

This course consists of both lectures on the various types of jigs and fixtures, and actual practice in the drawing room. Includes a study of accepted methods of construction; proper allowances; fits and tolerances; and the possibilities and limitations of basic designs.

Prerequisites: ME-210, ME-213

ME-421 - ME-422 Design of Machine Elements

Theory and problems involving both analysis and design of machine parts used in the construction of modern machines. Some of the machine parts studied are: shafts, keys, couplings, clutches, brakes, screws, bearings and lubrication, gears, cams, springs, and flywheels. Consideration is given to such factors as strength, stress concentrations, heat treatment, inertia forces and fatigue failure. (3-0-3) (3-0-3)

Prerequisites: ME-310, ME-315

ME-423 - ME-424 Machine Design

A continuation of machine design involving the analysis and design of complete machines such as reciprocating engines, punch presses and machine tools. (0-6-3) (0-10-5)

ME-425 Fluid Mechanics

A study of the properties of ideal fluids, flow of compressible and incompressible fluids in pipes and open channels; measurement of pressure and quantity rate of flow. (3-0-3)

Prerequisites: P-2, ME-310

ME-426 Mechanical Engineering Laboratory

For senior students in the Machine Design course. Experiments in the field of heat power, fluid mechanics, and mechanical properties of engineering materials. (0-3-2)

Prerequisites: ME-315, ME-425

DEPARTMENT OF ENGINEERING

DIVISION OF ELECTRICAL ENGINEERING

EE-223 Electronics Laboratory Procedures

Safety in the laboratory. Practical wiring, testing, soldering and measurement by the students (0-4-2)

Prerequisite: none

EE-224 Electronics Laboratory Procedures

A continuation of EE-223 including the construction and testing of simple amplifiers, receivers and transmitters. (0-4-2)

Prerequisite: EE-223

EE-311 Principles of Electrical Engineering

A general course for non-electrical majors in the more important elements of electrical engineering with emphasis on the principles and the physical action that takes place. The course includes a study in magnetic

circuits, electromagnetic induction, dc circuits, dc generators, dc motors, and dc power transmission. (3-2-4)

Prerequisites: M-204 and P-202

EE-312 Principles of Electrical Engineering

A continuation of EE-311. This course includes a study of ac circuits, application of complex algebra and vectors, three-phase circuits, transformers, ac generators, polyphase induction motors, synchronous motors, single-phase motors, and dc power transmission. (3-2-4)

Prerequisite: EE-311

EE-313 Direct Current Machinery

A course for electrical engineering majors in dc machinery. The course includes a study of dc generators, dc shunt motors, dc series motors, compound motors, motor starting and speed control, losses and efficiency, parallel operation, special purpose generators and motors. (3-2-4)

Prerequisites: M-204, P-202

EE-314 Alternating Current Machinery

A course for electrical engineering majors in ac machinery. The course includes a study of the construction of ac machinery and the principles of operation, synchronous generators, transformers, polyphase induction motors, single-phase motors, converters, and synchronous motors and power factor correction. (3-2-4)

Prerequisites: M-204 and P-202

EE-320 Electrical Measurements

A basic course in electrical measurements for electrical and non-electrical engineering students. The course includes a study of experimental errors, applications of potentiometers, ac bridges, instrument transformers, magnetic measurements, and electrical indicating instruments. (1-2-2)

Prerequisites: M-204 and P-202

EE-325 Electronics I

A course for electrical engineering majors in electronics. The course includes a study of extensions and modifications of the elementary theory peculiar to electronic circuits. It includes algebraic representation of vectors, bridge circuits, electrical networks, electromagnetic waves and electroacoustics. (3-2-4)

Prerequisites: EE-224 and M-204

EE-326 Electronics II

A continuation of EE-325 including basic tubes and their behavior through a treatment of industrial circuits and typical applications. Emphasis is placed on gaseous tubes, phototubes and the cathode-ray oscilloscope. (3-2-4)

Prerequisite: EE-325

EE-331 Electric Circuits and Machines—DC

A course in fundamentals, emphasizing principles rather than detailed theory. Topics included in this course are dc circuits, magnetism and electromagnetism, dc generators, dc motors, and dc motor control. (3-0-3)

Prerequisites: M-102 and P-202

EE-332 Electric Circuits and Machines—AC

A continuation of EE-331. This course includes ac circuits, vectors, three-phase circuits, transformers, ac generators, induction motors, synchronous motors, and single-phase motors. (3-0-3)

Prerequisite: EE-331

EE-415 Electric Control Systems

The course includes a study of magnetic control and protection of dc and ac motors, use of electronic and rotating amplifiers in control, and electric control in manufacturing operations. (2-2-3)

Prerequisites: EE-312, or EE-313 and EE-314

EE-416 Electric Power Transmission

A course including a study of mathematical methods used in the solution of transmission problems, circle diagrams, and a study of the economic transfer of large amounts of energy. (2-0-2)

Prerequisites: EE-312 or EE-314

EE-417 Electrical Engineering Applications

(2-0-2)

Prerequisite: EE-312 or equivalent.

EE-421 Electronics

A foundation course for non-electrical majors in electronic circuits and instrumentation. A study is made of electron emission, diodes, triodes and multielectrode tubes. Amplifiers and means of coupling are included. (2-0-2)

Prerequisites: M-204 and P-202

EE-422 Electronics

A continuation of EE-421. The course includes a study of power amplifiers, sine wave oscillators, gas-filled tubes, wave-shaping and control circuits and the use of the electronic voltmeter and cathode-ray oscilloscope in instrumentation. (2-0-2)

Prerequisite: EE-421

EE-427 Electromagnetic Waves and Radiation

A course for electrical engineering majors in electromagnetic radiation and propagation. It includes a study of the physical interpretation of gradient, divergence and curl, Gauss's law, the potential function, Poisson's and Laplace's equations, the steady magnetic field and Maxwell's equations. (3-2-4)

Prerequisite: EE-326

EE-428 Electromagnetic Waves and Radiation

A continuation of EE-427. This course includes a study of electromagnetic waves in a homogeneous medium, Poynting's theorem, guides waves, transmission lines, impedance, characteristics, antenna practice and design and ground wave and sky wave propagation. (3-2-4)

Prerequisite: EE-427

EE-429 Radio Engineering

A course for electrical engineering students in radio engineering on a senior level. It includes design of amplifiers, oscillators, detectors and inductors as well as transmitting and receiving circuit principles. (2-0-2)

Prerequisite: EE-426

EE-430, 431 Electrical Engineering Project

A course offered to seniors in the electrical engineering major wherein they have the opportunity of selecting specialized project in the area of electronics or power.

Prerequisites: EE-326 and EE-314

DEPARTMENT OF ENGLISH**E-101-102 English Composition**

The ability to speak and write clearly and correctly is a basic skill, an essential tool for all learning and leadership. In the first semester, grammar and punctuation, sentence and paragraph structure will be considered. In the second semester, the analysis and organization of materials will be stressed. One period of each week in the second semester will be devoted to oral composition. In both semesters students will submit frequent themes to demonstrate the grasp of the concepts involved.

E-401 Technical Report Writing

This course is designed to meet the requirements of technical reporting. Its approach is a flexible one; for this reason it is concerned merely with basic principles relating to structure, organization, and effective communication. No attempt is made to establish any standardized forms in technical report writing.

E-402 Public Speaking

Modern society demands that a college graduate speak effectively and clearly. This course is designed to meet these demands made upon the college graduate. The course will discipline the student in the criterion of speech construction and delivery. Students will have ample opportunity to address groups and thereby receive the benefit of constructive criticism.

**DEPARTMENT OF HUMANITIES
AND SOCIAL SCIENCES****H-110 General Psychology**

An introductory course to assist the student in developing an understanding of the fundamental principles of psychology and their application. Among the topics to be included are: growth and development,

motivation, learning, emotion and feeling, intelligence, human adjustment, mental illness, vocational guidance and crime and delinquency. Special attention will be given to the study of the dynamics of mental hygiene and the adjustive process.

H-120 Government

The aim of this course is to make the student realize that political and governmental processes are a living reality. Continuous attention to the human element and to phases of working politics will bring the student to a more personal acquaintance with our national government. A discussion of the general principles of American democracy will be followed by a description of the American political system, the organization and development of the two party system. Political parties will not be considered as an end in themselves but rather as a mechanism for carrying out the broader goals of democracy.

Stress will be laid upon the growth of our federal government, the legislative, judicial, and executive branches under the Constitution.

H-230 Economics

This course is designed to assist the student in developing an understanding of the principles of economics and their application in everyday life. Among the topics to be included are: the nature of production, the arrangement of the productive factors, basic characteristics of capitalism, the organization of business, the problem of business risks, the process of exchange, principles of money, and investment and commercial banking.

H-231 Economics

This course is a continuation of H-230. Among the topics to be included are: central banking in the United States, the business cycle, fluctuations in purchasing power, principles of price determination, costs of production, international trade, payment of international obligations, and the distribution of income.

Prerequisite: H-230

H-340 Sociology

The aim of this course is to aid the student in developing an understanding of the principles of sociology in order that he may live more intelligently and deal more effectively with the social problems of the world about him.

Topics to be covered in the course include factors in the social life of man, the role of culture, heredity and personality, personality disorganization, group life, suggestibility, status, cooperation, competition, conflict, population distribution and growth, communities, social institutions and social change.

Special attention will be given to some of the current social problems.

Prerequisite: H-110

H-411 Industrial Psychology

A study of the principles of psychology as applied to industry and business. Topics to be included are: individual differences and their nature, job satisfaction, industrial morale, incentive, job analysis, leadership and supervision, industrial conflict, unemployment, theory of psychological testing in industry, measurement of attitudes in industry, fatigue, accidents, the maladjusted worker and the Hawthorne studies.

Prerequisites: H-110 and H-340

H-412 Applied Psychology

A study of the application of the findings of psychologists to the problems of everyday life. Special attention will be given to the problems in the student's field of specialization. Topics to be included are: public opinion and propaganda, consumer and advertising research, selection of advertising appeals, psychology in music and art, psychology applied to mental health, psychology applied to industry and business, psychological effects of nutrition, drugs, alcohol and tobacco, and psychology applied to crime.

Prerequisites: H-110 and H-340

H-413 Psychology of Adjustment

A study of the dynamics of adjustment. Topics to be included are: primary and secondary needs, frustration, conflict, adjustive and non-adjustive reactions, the neurotic adjustment, the psychotic adjustment, the nature of psychotherapy and a positive approach to mental health.

Elective

Prerequisite: H-110

H-414 Social Psychology

A study of the influences of social conditions on the psychological processes. Topics to be included are: role and status, social class, leadership, social frustration, effects of group situations, prejudice, public opinion, mass communication and propaganda and abnormal social situations.

Elective

Prerequisite: H-110

H-421 U. S. History

The aim of this course is to provide the student with a clear overall picture of the history of the United States to the present time. Emphasis will be placed on such topics as: the founding of the National Government, the Civil War, industrialism, expansion, World War I, world depression, the New Deal and World War II. Special attention will be given to the period from World War I to the present.

Elective

H-441 Social Problems

The purpose of this course is to assist the student in developing an understanding of and an appreciation for some of the major social problems. Among the problems to be investigated are: crime, juvenile delin-

quency, divorce, the aged, unemployment, mental illness, alcoholism, poverty and depression.

Elective

Prerequisite: H-340

H-450 Labor Relations

A brief history of unions in America is essential for the proper perspective in determining the place of unions in our economic structure. A study of the scope, causes and consequences of the more important labor problems, such as those of insecurity, wages and income; the attempts to solve these problems by means of collective bargaining. Two periods a week for one semester.

Prerequisite: Economics H-231

H-460 German

A basic course in the German Language for scientific purposes. Elementary grammar giving a facility in reading and translating works from German scientific literature.

H-461 French

Consists of the same matter as H-460. Deals with scientific French instead of scientific German.

DIVISION OF MATHEMATICS AND PHYSICS

M-101 College Math I

Review of high school algebra through quadratics. Includes a further study of simultaneous quadratic equations, complex numbers, higher degree equations, inequalities, logarithms, exponential functions, progressions, mathematical induction, binomial theorem and determinants.

A study of relations among the trigonometric functions, and the functions of an acute angle. Some time is spent in the application and use of the slide rule.

M-102 College Math II

A study of plane and solid analytical geometry, functions and graphs, linear functions, polynomial curves, transformation of co-ordinates, the circle, algebraic and trigonometric curves, parametric equations, and polar equations.

Prerequisite: M-101

M-203 Differential Calculus

A preliminary study is made of variables, functions and limits. Differentiation and the rules for differentiating ordinary algebraic, trigonometric, exponential, and logarithmic terms are introduced.

Prerequisites: M-101, 102

M-204 Integral Calculus

A study of integration of standard elementary forms. Considers the constant of integration, the definite integral, process of summation, reduction formulas and practical applications.

Prerequisite: M-203

M-305 Applications of Calculus

A continuation of the calculus with special emphasis on application of integral calculus to problems on area, volume, length of curve, centroid and moment of inertia.

Prerequisites: M-203, 204

M-306 Differential Equations

A study of ordinary differential equations of the first and higher orders. The practical applications are designed for the engineer and chemist. Involves the use of operators, partial differential equations and a study of boundary conditions.

M-407 Statistics

This subject deals with the fundamental statistical measures which are required for the analysis of experimental data, and with the practical applications of statistical analysis to quality control and to planning of industrial experiments.

Prerequisites: M-101, 102

P-201 Physics

A study of heat, heat quantities, heat transfer, expansion, temperature measurement, etc. A thorough study is made of the properties of solids, the gas laws, motion, forces, vector quantities and simple machines.

Prerequisite: M-102

P-202 Physics

Continuation of P-201 to include a study of electricity including sources and effects of electrical currents, the simple series and parallel circuits, measuring instruments, etc. A study is made of the various phases of sound and light.

Prerequisite: M-102

DEPARTMENT OF CHEMISTRY

Ch-101 College Chemistry

This is an introductory course in Chemistry required of all students attending the Institute, with the exception of those enrolled for the degree in chemistry, during their freshman year. It comprises a general survey of Chemistry, its basic laws and theories, a general study of the commoner elements both metallic and non-metallic and a study of the use and application of chemistry to daily life. In the laboratory work which accompanies this course, the student performs experiments selected with a view to enabling him to learn to draw correct conclusions from definitive happenings. It also enables him to acquire a certain manipulative technique in using the basic chemical tools.

Ch-102 College Chemistry II

A continuation of CH-101. Second semester.

Prerequisite: Ch-101

Ch-111 Inorganic Chemistry

This course is required of those students matriculating in the Bachelor of Science degree in Chemistry. The course comprises a thorough study of basic chemical facts: study of matter, atomic structure and its applications to chemical reactions, the states of matter, solutions and equilibrium; the elements of Period III and their compounds are studied in greater detail in order to show more clearly the relation between atomic structure and chemical properties. The laboratory work accompanying this course is designed to accompany the lectures very closely and thus enable the student to apply his theory.

Prerequisite: High School Chemistry

Ch-112 Inorganic Chemistry II

A continuation of Ch-111. Second semester.

Prerequisite: Ch-111.

Ch-113 Qualitative Analysis

This course enables the student to tell what inorganic, and a few organic, substances are present in a compound. The latest semi-micro technique of analysis is used. In the laboratory the student applies what he has studied in the analysis of both "known" and "unknown" materials. Problem work dealing with equilibrium and the other important phases of qualitative analysis is stressed and the student is taught how to think for himself.

Prerequisites: Ch-112

Ch-114 Stoichiometry

A study of the various types of calculation involved in the study of chemical principles. Ofttimes called "Chemical Mathematics."

Prerequisites: High school mathematics, Ch-111.

Ch-201 Textile Dyeing and Printing

This course is adapted to the needs of the student enrolling in the Textile Engineering courses. Much of the elaborate laboratory work and knowledge required in the dyeing and printing courses is omitted. The student obtains sufficient knowledge to familiarize him with the terms and practices of the Dyeing Industry.

Prerequisites: Ch-102

Ch-202 Quantitative Analysis

This is a semester course designed primarily for students in the Textile Technology Course. It is so designed that the student acquires a working knowledge of the fundamentals of volumetric and gravimetric analysis: concentration of solutions normality and how determined, use of the burette and other volumetric apparatus, simple neutralization titrations, pH—its meaning and properties; the use of analytical balance the make-up and use of the Gooch filter, chemical factors and their applications, simple gravimetric processes.

Upon successful completion of this course, the student is well equipped to perform simple routine analytical work and understand what she is doing.

Prerequisite: Ch-102

Ch-203 Screen Printing

This course is particularly adapted to the needs of the students in the Textile Design and Fashion course. It is given in collaboration with that department and trains the students in the mechanics of screen printing. The student makes his own design, cuts his stencil, makes his screen, prints his own pattern and thus obtains a good idea of the potentialities of silk screen printing, especially as pertains to his particular field.

Prerequisite: Ch-104

Ch-204 Screen Printing II

A continuation of Ch-203. Second semester.

Prerequisite: Ch-203.

Ch-205 Screen Printing

This is a semester course given in collaboration with the Designing Department to the students in the Textile Technology Course. The students learn how to make their own designs, their own screens, how to print their designs and finish the prints. They are given some training in the making of the pastes and dyes and the simplified reactions involved in the printing.

Prerequisite: Ch-102

Ch-211 Elementary Quantitative Analysis

The lectures in this course comprise a thorough and complete discussion of the theories of solutions, a quantitative approach to oxidation-reduction reactions (redox reactions) and a study of some precipitation methods. The laboratory work is an application of the lectures. It consists of the calibration of the volumetric ware used and the analysis of materials by neutralization, oxidation-reduction and precipitation methods. Quality rather than quantity is stressed.

Prerequisites: Ch-113, Ch-114

Ch-212 Elementary Quantitative Analysis II

This course is a continuation of Ch-211 and consists of a study of the gravimetric methods of analysis.

Prerequisite: Ch-211

Ch-221 Introductory Textile Chemistry

This course consists of (1) a study of the physical and chemical constitution of the textile fibres, both natural and synthetic; (2) a study of the physical and chemical changes that result from the action of various inorganic and organic agents on the fibres; and (3) a study of the methods of application and the effects of the various classes of dyes on the fibres.

Prerequisite: Ch-112

Ch-222 Elementary Dyeing

This course consists of (1) a study of the preparation of the textile fibres for dyeing, and (2) a study of the application of the various classes of dyestuffs to the textile fibres.

Prerequisite: Ch-221

Ch-231 Elementary Organic Chemistry

A systematic study of the chemistry of the compounds of carbon as presented by the more prominent authorities in the organic field. Proper laboratory practice acquaints the student with the set-up of organic laboratory experiments and the synthesis, identification and proper handling of the compounds.

Prerequisites: Ch-112, Ch-113

Ch-232 Elementary Organic Chemistry II

A continuation of Ch-231. Second semester.

Prerequisite: Ch-231

Ch-311 Instrumental Analysis

This is primarily a laboratory course in which the student studies the analysis of various materials by means of analytical instruments. He studies the theory involved in the use of optical (colorimeters, abridged spectrophotometers, spectrophotometers) instruments, electrical (pH, potentiometry, electroanalysis) instruments and others. The laboratory work enables the student to make use of this theoretical knowledge in using the instruments.

Prerequisites: Ch-212, Ch-232

Ch-312 Instrumental Analysis II

A continuation of Ch-311. Second semester.

Prerequisite: Ch-311

Ch-321 Advanced Dyeing I

This course is taken concurrently with Ch-341 in order that the special attention necessary in preparing ground shade for discharge printing and the details of over-dyeing resist printed fabrics may be better understood by the student. The theory of the selection of dyes for those purposes and the need for the addition of special chemical agents to the dye-baths is studied in detail.

Prerequisite: Ch-222

Ch-331 Advanced Organic Chemistry

The study of more complex organic compounds and reaction mechanisms, with emphasis being placed on dyestuffs and their intermediates.

Prerequisite: Ch-232

Ch-341 Textile Printing I

In this course the student is introduced to the methods of textile printing (roller, screen, hand block, etc.) and the basic styles of printing (direct, discharge and resist). The preparation of print pastes for direct style printing of direct, basic, mordant insoluble azo, vat, leuco vat dyes, resin bonded pigments and oxidation colors is considered in detail, especially the complex chemical considerations of many of these print color preparations. All prepared color pastes are roller printed and the prints finished off by the students.

Ch-351 Bacteriology

An introductory course in bacteriology. The lectures present the fundamental concepts of this science and explain to the student bacterial classification and the significance of pathogenic and non-pathogenic micro-organisms. The laboratory work includes: (1) preparation of culture media; (2) sterilization of equipment and cultures; (3) aseptic preparation and handling of pure cultures and (4) simple and differential staining.

Prerequisite: Ch-222

Ch-352 Microbiology

This course includes the study of various micro-organisms and their importance to man and his textile world. Sterilization, disinfection, fumigation and staining, and methods of studying the action of molds and bacteria on textile fabrics are studied. Laboratory work includes the preparation and sterilization of the specific culture media, the staining and microscopic observation of the specific bacteria involved, and mildew and rot-proofing tests on textile fabrics.

Prerequisite: Ch-351

Ch-402 Manufacture of Synthetic Fibres

This is a lecture course for the Seniors in the Textile Engineering Course. The student learns how the various synthetic fibres, both filament and yarn forms, are made, starting with their raw materials up to their emergence as yarns.

Prerequisite: Ch-102

Ch-403 Introductory Textile Finishing

This is a course set up for the students enrolled in the Textile Design and Fashion Course and deals with the application and end use of the various classes of textile finishes.

Prerequisite: Ch-104

Ch-411 Physical Chemistry

A study of the fundamental laws and theories of chemistry and of the various factors which modify and change the reactions and properties of chemical substances. The laboratory work is chosen to illustrate the principles studied. The problems given are a very important part of the course and quantitatively exemplify these principles.

Prerequisites: Ch-212, M-204, P-202

Ch-412 Physical Chemistry II

A continuation of Ch-411. Second semester.

Prerequisite: Ch-411

Ch-421 Advanced Dyeing II

The theory and practice of color matching are principally emphasised in this course. The student is taught the proper method of obtaining a given shade by using a combination of several dyes. The testing of various classes of dyestuffs for their coloring powers and money value

is included. The characteristics of the various dyestuff combinations is considered.

The more important AATCC tests procedures are also carried out.

Prerequisite: Ch-321

Ch-431 Chemistry of Textile Fibers

A course emphasising: the relationship between the chemical structure and physical properties of fibers; the nature of the chemical reactions which produce degradation of fibers; the production of synthetic fibers. The short laboratory period is devoted to tests that serve to identify the types of fibers and their degradation products.

Prerequisite: Ch-232

Ch-441 Industrial Chemical Analysis

The student learns how to determine the properties, and to analyze many of the chemical materials used in the textile industry. He will analyze soap, bleaching agents, caustic soda-ash, etc. He is expected to apply the knowledge and experience acquired during the previous courses in Chemistry.

Prerequisite: Ch-312

Ch-442 Industrial Chemical Analysis II

This course, a continuation of Ch-441 teaches the student how to analyze coal, oil, water, certain types of organic materials (using the Kjeldahl Method) and finishing compounds.

Prerequisite: Ch-441

Ch-451 Textile Finishing

This course is restricted to students in the Textile Chemistry Course and deals with the application and end uses of the various classes of textile finishes and the procedures used in the application of these finishes to fabrics.

Prerequisite: Ch-321

Ch-452 Textile Finishing II

This course, a continuation of Ch-451, gives particular attention to special finishes, such as water repellant, fire retardant and crush resistant effects. This course is supplemented by field trips to various plants, bleacheries, dyehouses and textile printing plants.

Prerequisite: Ch-451

DIVISION OF WEAVE FORMATION AND FABRIC ANALYSIS

TE-161 Weave Formation I

Definitions of the words and terms used in designing and analysis. Characteristics of the various classes of fabrics. Design paper and its application to designing and analysis. Cloth structure, with a study of the various sources from which the patterns of fabrics are obtained. Twills. Wave effects. Diamonds. Sateens. Granites, Checkerboards, Rearranged twills. Figured twills.

TE-162 Weave Formation I

Designing for single fabrics continued, such as honeycombs. Mock and imitation lenos. Entwining twills. Spots weaves arranged in various orders. Cord weaves. Imitation welts. Elongated twills. Check effects. Corkscrew weaves. Four change system of designing. Damask weaves.

TE-163 Fabric Analysis I

Standard methods of representing harness and reed drafts. Harness drafts on design paper. Written harness drafts. Chain drafts. Layout plans. Finding weight of warp yarns, weight of filling yarns. Yards per pound of cloth.

TE-164 Fabric Analysis I

Finding counts of warp and filling by various methods. Finding yards per pounds of cloth from a small sample by weighing. Making original designs and weaving them on the power loom. Reproduction of woven samples.

TE-165 Introductory Textiles

This course is designed for the purpose of indoctrinating Freshmen of Textile major courses in the non-technical phases of the textile business. It gives the student an elementary understanding of yarn and fabric production, origin of materials, and use and performance characteristics of various textile materials.

TE-166 Introductory Survey of Textiles

An introductory course designed to familiarize the student with elementary and non-technical phases of the textile industry. A study of the definitions of the common terms used in manufacturing and finishing of textiles. Properties and characteristics of the common natural and man made fibers. Flow-charts of the principle fibers, from raw stock to finished fabric.

TE-167, 168 Fabric Classification

A study of characteristics of a wide range of staple fabrics made of cotton, wool, rayon, silk, nylon, orlon, azlon, glass and other fibers. In this subject, the student is supplied with samples of the various materials together with the information pertaining to their characteristics such as construction, composition, weave, performance and uses. At the conclusion of the subject, the student has a notebook containing about 300 samples of staple cloths and the data applying to each sample.

TE-169 Fabric Classification

A course relating to the characteristics, performance, properties and uses of a wide range of staple fabrics. Special emphasis placed upon the manner of producing various textures in woven fabrics, incorporating both natural and man-made fiber content.

TE-261 Weave Formation II

Designing for more complicated fabrics such as figure fabrics using extra materials. Fabrics backed with extra material. Fabric having

the face and back of different material or pattern. Double plain fabrics. Reversible fabrics. Embossed effects, such as Bedford cords, piques, Marseilles weaves.

TE-262 Weave Formation II

Continuation of the study of the construction of double woven type fabrics. Designing of various woven leno patterns, including marquissette plain and marquissette with extra filling patterns, 3-end weaves, inverted doup lenos, check lenos, Jacquard effects. Preliminary study of pile woven cloths.

TE-263 Fabric Analysis II

The analysis of woven fabrics to secure the necessary information for reproducing materials containing weaves such as those studied under TE-261. The student is required to create an original pattern within this category.

TE-264 Fabric Analysis II

The analysis of fabrics studied under TE-261-262. Special emphasis upon weave details, drawing-in plans, and chain drafts for various types leno woven fabrics.

TE-265 Color

A study of the theory and facts of color so that the student of textile courses can understand the use of the performance of colors when applied to fabrics. The course includes hue, value and chroma scales, complementary colors, harmony and color effects.

TE-266 Fabric Analysis

Advanced study in the reproduction of woven fabrics, incorporating more complicated weaves, drawing-in plans and chain drafts than those included under TE-163-164. Re-styling of patterns based on adjusted fabric construction and composition.

TE-267, 268 Hand Loom Weaving

The hand loom, its construction and use. Harness drafts as affecting the weave. Building harness chains. Practice on the hand loom in weaving fabrics from original and other designs, and putting into practice the designing lessons.

TE-269, 270 Fabric Classification

The first part of this course is concerned with an elementary study in weave formation and fabric analysis to acquaint non-textile engineering majors with the principles of technical fabric designing. Following, the student is supplied with a representative number of staple type fabrics together with a description as to construction, composition, performance and uses.

TE-361 Jacquard Designing

Design paper. How to figure the design paper necessary to reproduce any Jacquard pattern. Defects of Jacquard patterns and how to avoid them. Transferring designs to plain paper. Transferring sketches to

design paper. Changing the sley of Jacquard fabrics. Methods of casting out. Ground weaves. Rules for finding sley, pick, warp and filling. Foundations upon which Jacquard patterns are based.

TE-362 Jacquard Designing II

Different methods of making designs. Sketching original designs by the different methods commonly used. Working out the sketches upon design paper. Cutting cards on the piano card-cutting machine. Card lacing. Weaving of at least one original design.

Harness tying. Various systems of tying Jacquard harnesses. Lay-over ties. Center ties. Compound ties.

TE-363 Fabric Analysis III

Analysis of more difficult samples continued. Methods of analysis of various rayon fabrics. Finding average counts. Percentage of each material. Production of loom. Price per yard for weaving. Weaving of more difficult original designs.

TE-364 Fabric Analysis III

Continuation of the work outlined in TE-363. Weaving of students' original Jacquard designs. Work on cost of manufacturing fabrics.

TE-365 Styling

Study of common fabrics. Application of cloth analysis to the requirements of a converter or of a commission house.

Methods of ascertaining counts of warp and filling; also sley and pick for new fabrics.

Determining use of colored yarns in striped and figured fabrics with relation to cost of dyed yarns and woven colored patterns.

This is a continuation of analysis. Changing the construction of fabrics. Making sketches for alteration of fabrics. Finding cost of fabrics.

DIVISION OF KNITTING

TE-241 General Knitting

This is an introductory course in knitting covering the basic principles of circular and flat bed machines and their fabrics. This includes the study of their gauge and elements, productivity and the various classes of machines.

TE-242 General Knitting

This course involves a complete study of the dismantling and erecting of each machine and includes a recognition of the various cams and their replacements. Circular, jersey, rib and hosiery machines are covered.

TE-243 Knit Fabric Analysis

This course is to determine the different characteristics found in various patterns and stitches. It also covers fabric identification relative to each class of machines.

TE-244 Knit Fabric Analysis

An advanced study in methods of analysis comprising more elaborate type materials in the reproduction and designing of knit fabrics. The student develops numerous patterns capable of being produced on various type machines.

TE-245 Flat Knitting

This step in knitting is to recognize the differences between the various warp knitting machines and classes of full fashion machines. Machines included are hosiery (full fashion), warp knit (tricot), and Raschel type, such as Cidega.

TE-246 Warp Knitting

This course includes a study of warping to create various patterns, as well as the adjustments that are required on warp knit equipment, such as the Tricot and Cidega.

TE-247 Needle Technology

This course covers the study of all types of needles used in the knitting and sewing trades. Student must have full respect of its study because it is a key point in its field. It includes the straightening, alignment and correct ways of handling segments that involve the quality of fabrics and efficiency of machines.

TE-341 Warp Knitting

A study of the relation of wrap knit machines to the variety of stitches, patterns, types of yarns capable of being used and other factors incidental to this class of knitting.

TE-342 Flat Knitting

This comprises a complete study of the full fashion hosiery machine, its maintenance, its production and the designing of hosiery, following through to a finished product.

TE-343 Knit Fabric Analysis

A study of characteristics of various type knitted fabrics from the standpoint of stitch, construction and pattern. The student is taught how to analyze different types of fabrics for purpose of reproduction. Included, is the analysis of hosiery and half hose for factors of construction, wear, size, standards, etc.

TE-344 General Knitting

This is an introductory course to cover the principles of circular and flat bed knitting machines and the types of material they produce, covering designing, cost finding and finishing in all phases of knitting fabrics.

TE-345 Motion and Timing

A study of the methods and motions relative to each class of knitting machine. Timing is studied with regard to repairing procedures, development of new patterns and parts replacement.

TE-346 Braiding Principles

This course is to familiarize students with methods of producing braid and to understand its machinery, in flat and round braid.

TE-347 Supplementary Machines

A course in which the student is trained to repair and correct defects in sewing machines, such as looping, backseaming. Finishing equipment, preboarding and setting of fabric and yarns and the winding and packaging of all types of yarns are a part of the course.

TE-348 Sewing Machine Maintenance

This course is a general sewing machine course, covering all types and classes found in the garment industry. The student is trained in the uses, performance and maintenance of the equipment.

TE-349 Mill Engineering

This course consists of lectures, supplemented by work in the drafting room. Problems in design construction and equipment of a knitting factory are studied. Floor plan and required equipment are determined by the student in solving a problem comprising a particular production of a certain type of knitted material. Generating and transmitting of power, types of power drive, methods of lighting, heating and ventilation are a part of the course.

DIVISION OF SEWING MACHINE OPERATION AND MECHANICS

This course is set up strictly on the two-year plan with recognition given for the last semester to be served partially in plant.

TE-250, 251 Machine Classification

This course is to acquaint students to classify each machine in its own type class and capacity of speed required by manufacturer.

TE-253, 254 Time Study and Cutting

This course is to enable students to lay out machines in cutting and stitching department for greater efficiency, methods of handling fabric for a synchronization program.

TE-255, 256 Timing and Assembly

This step in this course is the major one because its laboratory hours create a good maintenance man. It requires tearing machines apart and assembling them until students have all parts and numbers recognized for better understanding of the functions of machinery.

TE-350,-351 Timing and Assembly

This step in the course consists of lectures on fabrics, thread, needles and all subjects included in stitching, stitch classification and style. It also requires all students to handle and sew on all types of machines to enable them to teach or instruct stitchers in industry.

TE-352 Maintenance

This course consists of round table discussions on all types of machines. These machines cover ninety percent of those found in industry which are Metropolitan, Willcox & Gibbs, Merrill, Singer, Union Special and a variety of special machines. These discussions cover construction, timing, various adjustments, motor, table adjustments and cutting room layout.

TE-353 Maintenance

This is the final step in the course with added study to stitching on fabrics of all types, with the handling of folders and attachments to be applied to any or all machines.

TE-354, 355 Time Study and Manufacturing

This step is to check speeds of machinery relative to labor and garment construction. This will enable a student to get a general picture of garment assembly, working conditions and machine evaluation. This will also include cutting room problems such as fabric layout, packaging and bundling, and work relay to operators.

DIVISION OF TEXTILE DESIGN AND FASHION**TD-101, 102 Nature Drawing**

The study of structure, pattern, color and texture of natural objects. Plates also stress design and drawing. Students begin with pencil and then use watercolors and pen and ink.

TD103 and 104 Life Drawing

The study of the human figure, its mass, form, and proportions with emphasis in the first year on action drawing. Course in Anatomy No. 70-111 assists the student in learning about the human form.

TD-105, 106, 204, 205 Drawing and Painting

This course is concerned with learning the uses of all media such as pencil, charcoal, pen and ink, brush and ink, watercolors, and oils. The student draws and paints from still life setups, outdoor study, and landscapes.

TD-107, 108 Design

Experiments in basic elements of design to develop the students awareness of the world, to stimulate his imagination and to help him realize and improve his own potentialities. Problems are in two and three dimensions involving line, form, area, color, texture and space.

TD-109, 110, 204, 205 Art and Civilization

Study of artifacts and their uses and of cultures, past and present.

TD-111, 112 Anatomy

A study of the bones of the skeleton, the muscles, and complete construction of the human figure. This is the basis of life drawing, fashion illustration and fashion design.

TD-113 Lettering

Begins with study of skeleton letters and calligraphy. Built-up letters and the effective use of lettering follows.

TD-201 Nature Drawing

Rendering in watercolor, tempera and scratchboard.

TD-202, 203, 301 Life Drawing

An advanced drawing class often using a fashion model for illustration classes as well as life model. Life drawings are sustained studies and modeled figure drawings.

TD-206, 207, 304, 305 Art History

This course, Art History, is coupled with art appreciation to give the student a broader understanding of, and a sensitivity for, cultures of the past, the present, and the future. The design of artifacts from other cultures is also of importance to the design student. Frequent visits to museums of art are included in the course.

TD-208, 209 Textile Design

Begins with the practice of block printing to illustrate various methods of repeat. Students experiment with color, pattern, and texture in block prints, screen prints and hand woven fabric.

TD-210, 310, 311, 405, 406 Fashion Illustration

Setting up of the fashion figure; development of rendering and techniques for reproduction purposes; and interpretation of fabric textures. Sketching from fashion models. Further study of reproduction for newspapers and magazines. Field trips to engravers and newspapers. Study of layout and advertising necessary to the fashion artist.

TD-302, 303 Textile Design

Theoretical problems in fabric design and printing keyed to industrial production for a variety of uses. Includes wrapping papers, wallpapers, etc., as well as fabric design.

TD-306, 307 Screen Printing

Integrated with professional textile design to carry to completion a number of printed designs each semester. Students cut and adhere film, prepare screens, make print paste, figure repeats, and print their own cloth.

TD-308, 309, 403, 404 Handloom Weaving

This course gives the student the opportunity to get back to the basic principles of weaving and experiment with many combinations of materials in order to seek new textural effects which can be reproduced on the power loom.

TD-312 Fashion Fundamentals

A survey of periods, sources, and individuals with relation to their influence on fashion. Designing for the individual according to type, coloring, and figure proportions.

TD-313, 407, 408 Fashion Design

A study of the fundamental principles of the trade procedures in pattern drafting and draping. Work in the construction and use of basic patterns is followed by advanced methods and use of personal measurements in pattern drafting. A study of the reaction of all fabrics in relation to the apparel requirements.

TD-401, 402 Textile Design

More complex problems in fabric design and experiments with diverse effects using the silk screen process. Second semester begins individual work on the thesis for presentation before graduation.

TD-409 Degree Project

During the second semester of the senior year each student selects a specific part of the textile design and fashion field on which he will do a required amount of research and creative work. This project must be submitted for approval before graduation.

